

Value of Household Production in Finland and Germany

Analysis and Recalculation of
the Household Satellite Account System in both countries



Yvonne Rüger
Johanna Varjonen



NATIONAL CONSUMER RESEARCH CENTRE

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FOREWORD

Major object in estimating the value of household production is to improve the comparability of measures of total economic activity between countries. Official national accounts mainly exclude one producer sector of household services: households. Satellite accounts of household production are meant to amend this deficit. Value of household production has been measured in several countries during last twenty years. The United Nations and European Union have been active in developing the methodology for household satellite accounts, not least because of its relatedness to the gender issue.

In Europe, measurements have followed guidelines published by Eurostat, but the method work is still in progress. Therefore, differences occur between countries, according to their own traditions, country specific conditions, and needs in producing the estimates. Differences may occur in wage concepts used in estimating labor value, activities included in the household production and the population included in the calculations. Consequently, the results of the estimates and their GDP-shares cannot be compared directly between countries. The publication at hand represents the first effort to produce comparable figures between two countries, Finland and Germany.

The research has been made by Ms Yvonne Rürger as her diploma thesis at the Anhalt University of Applied Sciences, Bernburg, Germany. Ms Yvonne Rürger visited the National Consumer Research Centre as an exchange student from August to December 2006 and during that time got familiar with the method and data used in the Finnish calculations. The work was supervised by Prof. Dr. Margot Steinel and Dr. Johanna Varjonen. This report consists of the diploma thesis in a shortened form, completed with comments and reflections provided by Dr. Johanna Varjonen. The theoretical part of the thesis, especially, has been shortened and the report focuses on the developing the comparability of the methods and on the results.

National Consumer Research Centre presents sincere thanks to Ms Yvonne Rürger for the innovative and careful work which resulted in interesting new information, Dr. Johanna Varjonen for the completing comments.

Helsinki,
April 2008

Johanna Leskinen
Research director
National Consumer Research Centre

CONCLUDING COMMENTS AND REFLECTIONS ON THE COMMENSURABLE VALUE OF HOUSEHOLD PRODUCTION IN GERMANY AND FINLAND

by Johanna Varjonen

The only way to compare the magnitude of household production in different countries has been to proportion it to their GDP. This is a very rough measure. The results may show huge variation – ranging, for example, from about 14% in Hungary¹ to 130% in Spain² (2007). Yet, a consensus exists among researchers that the actual value of household production is somewhere between 30% and 50% of GDP. There is no doubt that the considerable differences between the household production figures shown in country reports undermine the credibility of the measurements of and render their results irrelevant. It is obvious that a large share of the differences in results are due to differences in the methods used.

I see two major reasons why systematic comparisons between countries are necessary. First, they are able to expose the real variation in the volumes of non-market household production between countries. Second, systematic comparisons are likely to boost method development. Comparison makes it necessary to go into profound reasoning on the differing methodological solutions applied in different countries in order to develop the best practices that can be mutually agreed upon. In other words, comparisons can help to develop the methodology further.

In this respect, the research at hand by Dipl.-oec.-trof. (FH) Rürger is a pioneering work. A comparison between German and Finnish satellite accounts of household production reveals that conclusions based on the original reports can be misleading: non-market per capita household production is, in fact, not higher in Finland than in Germany as the original reports would indicate.

And such discrepancy happens even though Germany and Finland both follow the main guidelines developed by the Eurostat task force which both countries had a hand in. The basic principles were indeed congruent: both countries applied the input method and used general housekeeper wage rates as a valuation basis.

In close examination, however, differences did emerge – some marginal, some having greater influence on the results. Minor differences concerned deviations in production boundaries and classification of activities. For example, productive exercise was included in SNA production in Finland but excluded from the German accounts. Major deviations resulted from the use of different wage concepts in the household satellite account. Finland applied gross wages and Germany net wages. Yet, nine different wage concepts had been used to estimate the value of labour in Germany for the very purpose of demonstrating the great impact it has on the results.

To adjust the two datasets the researcher turned to a midway solution: she used actual working time together with net wage. This incurs some uncertainties: for example, average tax rates have to be applied because individual rates vary, and the time used for meals and rest breaks, holidays, sick leaves, etc., cannot be known exactly. Nevertheless, decisions like these must be made in order to achieve international comparability of measures.

The adjusted results of economic activity in Germany and Finland reveal surprising similarity in the structure and per capita value of household production between the two. This concerns both the volume of non-market work and the value given to working time. The generalist wage of a housekeeper, based on actual working time, happened to be almost exactly the same in euros: € 8.98 per hour in Finland and € 8.85 in Germany. The total value, however, was somewhat higher in Germany.

Per capita difference in total economic activity, as indicated by extended gross value added, between the two countries decreased when household production was taken into account. Per capita

1 Szép K (2003) Összefoglalás helyett – A nemzeti számlákban nem kimutatott háztartási termelési számlája és a jövőbeli feladatok 185-187 in: A háztartási termelés értéke a mai Magyarországon. Hungarian Central Statistical Office.

2 Duran M-A H (2007) The satellite account for unpaid work in the Community of Madrid. La Suma de Todos. Comunidad de Madrid 36.

GDP in Germany was € 24 863 and in Finland € 26 083, and extended GDP € 35 666 and € 35 511, respectively. This confirms the assumption that household production and market production are, at least to some extent, substitutes in supplying the services necessary for people's wellbeing: meals, clothing, care and housing. It may also reflect the effect of social policy measures – for example, whether the care of small children is organized by the public sector or by households themselves.

The comparison at hand deals with the most important and disputed factor in the production account: namely, the value of labour. Other elements were excluded from the analysis due to the scale and requirements of a diploma thesis. However, the consumption figures in the accounts may also be very interesting. What is the value of capital and intermediate consumption in household production? This factor indicates the level of complementarity of unpaid labour with market commodities, thereby proving the interconnectedness of household and market production. Such factors should also be made commensurate, as distinctions may occur in the durables included in the capital goods for household production (e.g. for housing) as well as in the market goods defined as used for intermediate consumption goods and those defined as final consumption goods. The amount and value of market goods used non-market production may raise new, interesting dimensions for analysis and shed light as to the stage of a country's economic development.

To conclude, this first effort to make the household production account comparable between two countries gave interesting results. It shows the significance of such comparisons not only to indicate the margins of economic activity between countries but also with a view to method development. In pursuing the best solutions for a common method it is important to determine the reasons behind divergent decisions, which can then lead to more unified methodology.

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1 PROBLEM AND OBJECTIVE

Households carry out activities that benefit the well-being of the family. Such activities might be the daily provision of the family or the domestic child care and education as well as handicraft works.

All such activities can be subsumed under the term of household production, which generally comprises the added value in households through unpaid work.

These unpaid achievements rendered in households can be valued by Satellite Account Systems of Household Production. These systems assess the dimension of productive activities carried on in households and aim to assign a monetary value to the unpaid work. In the literature this dimension is indicated at 30 up to 50 per cent of the gross domestic product. (cp.: In straw 1995, p.6) It therewith constitutes a considerable and significant proportion of the total economic output.

However, household production is currently not recorded in the accounting system for measuring economic production: the national accounts. The national accounts are internationally accepted systems that measure the performance of a market economy. They are primarily market-based and shed only little light on the non-market sector. Household production indeed is mainly performed outside the market sector and hence, is not reflected in the economic indicators of the national accounts.

Accounting non-market production through satellite accounts would consequently support the alternative aggregate measures of the conventional accounts. The coverage of household production might illuminate the entire production process. It involves a broader reflection and additional knowledge on non-market production. Supporting the core accounts with specific information might contribute to a better understanding of the economy and the sources of economic growth. (cp.: OECD 2004, p. 3 et seqq.)

The evaluation of the dimension of household production however is problematical as the development of satellite accounting is not finalised yet. It is rather at an experimental stage, which means that currently no international consensus on the most appropriate calculation methods exists. (cp.:

Schäfer 2004, p.) Due to the lack of regulations, various methods of valuing household production are applied. Every nation use more or less differing methods, depending on the individual information needs and statistical accounting conditions. Consequently, cross-national comparisons of the computed values are not possible.

The multiplicity of calculation methods causes a loss of expressiveness since the values of household production can't be compared on the international level. Without an international standardisation of the valuation methods, it is possible to analyse household production on the domestic level only. This is consequently not as meaningful and beneficial as it could be when a comparison with other nation's results would be enabled.

The objective of this work therewith was a comparison of the value of household production on an international level. Finland and Germany exemplified for the international comparison of the value of household production. Their household satellite account systems were analysed within this work to detect potential discrepancies of the adopted calculation methods. The influence of diverging calculation methods and the therewith caused incomparableness of the results was to be identified.

Moreover, the satellite account systems should be recalculated by applying consistent calculation methods to gain completely comparable values of household production and to indicate the actual extent of deviation that differing calculation methods may cause.

2 THEORY AND BASICS

2.1 Satellite Accounting

Satellite Account Systems supplement the existing concept of the national accounts. They are compiled for the purpose of providing additional information on certain fields of interest that are not or only insufficient covered through the central system. Complementary and continuative evaluations can be realised by the satellite accounts. They represent a precious enrichment of the analytical capacity of the national accounting approach.

Satellite Accounts necessarily have to be conceived as separate, additional systems to the national accounts that simply provide more information on selected areas exceeding the boundaries of the SNA. Thereby they chiefly use the SNA framework in a flexible manner to stress their underlying purpose. Hence, satellite accounts are based on the extension of the SNA concept. They perform like a tie, since they are compatible with the core national accounts as well as they have a close connection to a specific field of interest. They facilitate the linkage of conceptually not involved data to the core accounts and therewith, broaden the dimension of the national accounts. (cp.: Varjonen 1999, p. 6, SNA 1993, 21.5.)

Satellite account systems create complementary dimensions by facilitating the introduction of a new scope or the involvement of more specific data on a given field for instance. Following, topics beyond the field of investigation of the SNA can be explored. Analyses, which are conceptually not allowed for in the SNA, can be performed in the satellite framework. Various fields of investigation might be introduced to the central framework. Fields of interest thereby may pose topics like tourism, health care, environment and household production amongst others listed in the ESA. (cp.: ESA 1995, 1.18.)

For each field of interest separate satellite account systems dealing with the specific data needs are compiled. They provide continuative and beneficial information focusing on the given topic.

A satellite account system focusing on the field of households is the satellite account of household production (HHSA). It deals with the contribution of households to the economic performance.

2.2 Characteristics of Household Satellite Accounts

Satellite Accounts of Household Production (HHSA) introduce an additional dimension by broadening the national account's concept of production. The scope of the core accounts is enlarged in that the productive role of households is recognised in the production concept. A HHSA demonstrates the productive activities undertaken by households and provides a picture of household production alongside market production. (cp.: Varjonen et al. 1999, p. 6)

Consequently, two main aspects are presented by the HHSA. On the one hand, an extended production concept is introduced. Therein, the productive role of households is recognised. On the other hand, a new scope of presentation is implicated. Household production is stated in relation to the already recognised market production.

In the HHSA the production boundary of the national accounts is modified to meet the new perception of households. Households are therein not solely seen as consumers anymore but rather as productive units engaging in the production process.

A HHSA does not simply assume households to consume its purchases finally. It rather perceives households to supply their purchases to a productive process wherein these are transformed in such manner that they are suitable to meet the household's individual needs.

For instance, the purchased food is mostly not consumed directly but rather processed and prepared further on. Consequently households perform productive activities before consuming purchased goods finally.

Achievements rendered in households were related to economic processes in the HHSA due to the extended perception of private households. (cp.: Glatzer, 1983, p. 254) Households are regarded as economic units producing goods and services comparable to commercial enterprises by combining labour force and intermediate inputs and if applicable by the use of production facilities. (cp.: Lützel, 1983, p. 263) According to this approach, the productive activities carried out in households are equivalent to the production processes on the market and the produced goods are identical or similar to those on the market.

The approach of the HHSA assumes a close relationship between the market life and the household behaviour. If households choose the option of

primarily purchasing market goods to satisfy their needs, the volume of own-account-production (household production) would decline and vice versa.

The output of an economy indicated in the figure of the GDP would increase if household production regresses. This is due to the fact that a big part of household production is invisible for the national accounts. Following, if households consume those goods produced in a production process visible for the national accounts (in market units), the indicator states a high productive capacity. If otherwise households mainly consume own-account products that have been generated under invisible conditions, the GDP would indicate a lower magnitude.

Actually, the HHSA just accounts for those activities that are not recorded in the SNA. The production process is going to be lost in the scope of the SNA since the resulting outputs pass no inter-unit exchange. The process therewith becomes invisible.

Thus, the GDP does not represent household production in an adequate way according to the purpose of the HHSA. Therefore it assigns a new measure, comparable to the GDP, avoiding the understatement of household production.

Intending to reflect a reliable picture of the productive capacity of an economy, both, the market sector and households as well should be considered consequently. The national accounts cover household production only partly. They focus on the performance of the market sector.

The omission of household production may lead to biases. The purpose of the HHSA therefore is to draw an overall picture of the entire non-market household production and fill the gap of representation in the national accounts. It aims to present household production comparable to market production so that its magnitude becomes conceivable and first of all visible.

2.3 Production Boundary in the SNA and the HHSA

Households are deemed to be market participants engaging actively in economic life. Their perception as entrepreneurs in the role of producers however differs between the HHSA and that of the SNA.

Goods and services generated in households are basically intended for the consumption in the same

unit they were produced in. Generally, the generated outputs are not supplied on the market and the household members themselves benefit from them. Household activities therefore are related to the own-account production that is mainly not accounted for in the concept of the SNA¹.

The HHSA production boundary partly differs from the production boundaries assigned by the SNA. The HHSA puts its focus on the non-market household production. This is the production of goods and services that were not supplied on the market and rather are intended for own final consumption. The HHSA aims to compensate their understatement in the national accounts and redefines the production concept in order to expand its definition. (cp.: Varjonen et al. 1999, p. 14 et seq.)

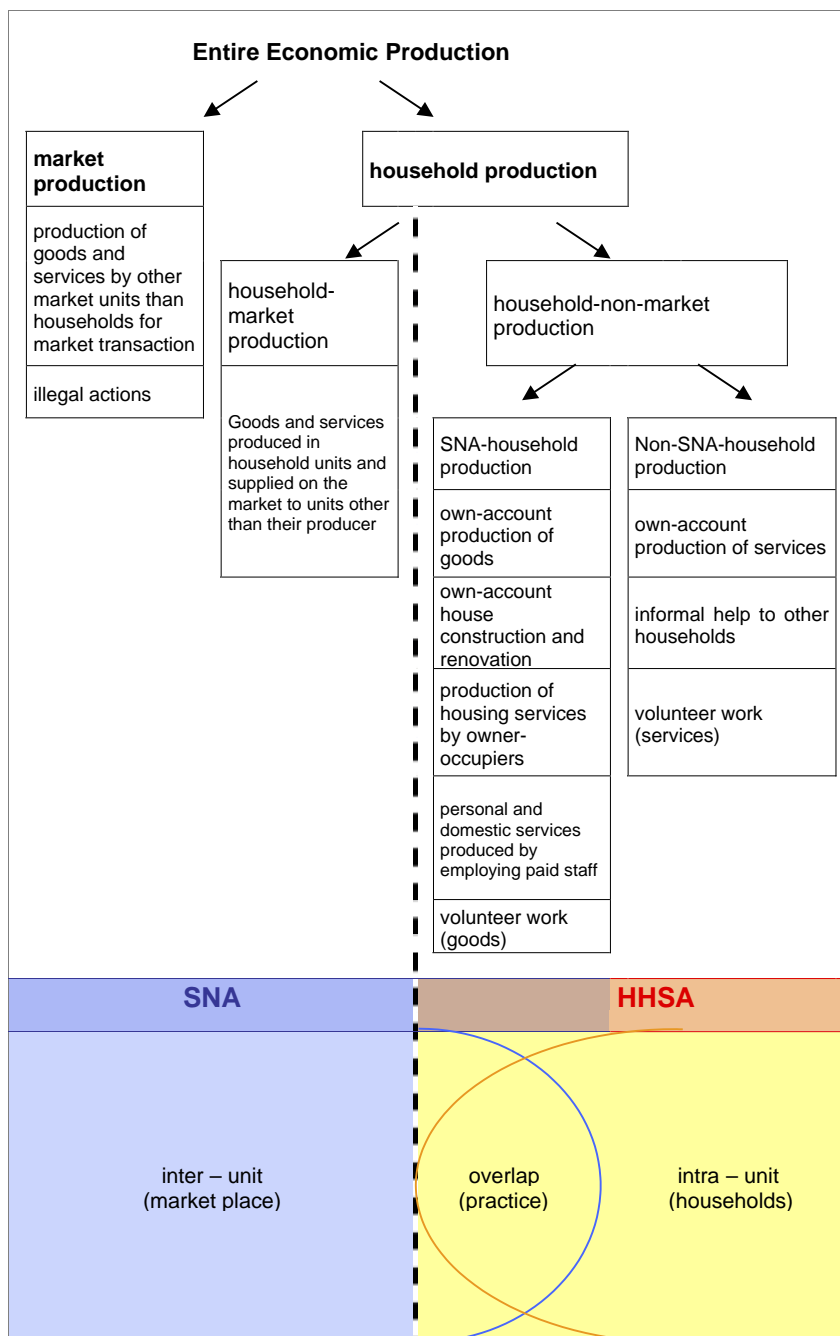
The redefined production boundary of the HHSA consequently comprises all productive activities² of households, those included in the SNA (own-account production resulting in goods) as well as those excluded from its boundaries (own-account production resulting in services).

As the multiplicity of household activities is bounded to the economic relevant ones, attention should be drawn to the defined boundaries in the SNA and HHSA, which are illustrated in figure 2.1. The figure also shows which parts of the economic production processes are covered through the concept of the SNA or the concept of the HHSA respectively.

According to Eurostat, household production needs to be divided into market and non-market production. The section of household market

1 A distinction between own-account production resulting in either goods or services is made only. Activities resulting in goods are included in the boundary and recorded for. Activities resulting in services are excluded from the production boundary by contrast. Sole exception is the own-account production of housing services by owner-occupiers and domestic and personal services produced by employing paid domestic staff. These services are both included in the SNA production boundary. (cp.: SNA 1993, 1.22., 6.24., 6.18. (c))

2 Merely the productive activities performed in households are included in the production boundary and are accounted for household production in the HHSA. The HHSA reverts to the third party criterion to distinguish productive and non-productive activities.



source: own illustration, according to Eurostat 2003, p. 5 et seq., p. 9

Figure 2.1: Classification of the production

production includes all household outputs, goods and services, which are supplied on the market, or intended to be so. Examples are households operating their own unincorporated enterprises, or 'bed and breakfast' services for tourists provided by households. Household market production is

covered through the national accounts and is not evaluated in the HHSA.

Household non-market production indeed is the generation of goods and services that run no market transactions and remain in the producer household for own final consumption. These are

the typical own-account production processes. They are entirely covered by the HHSA.

This section is further subdivided into production that is already recorded in the national accounts and into production excluded from it. Hence, the own-account production is differenced in the SNA and Non-SNA household production section. (cp.: Eurostat 2003, p. 5 et seq.)

The figure further illustrates that the SNA covers the entire part of market transaction, regardless, which market unit engages in this production (hence, possibly as well households) or whether goods or services are produced. The SNA also includes certain non-market exceptions besides the pure market production. They are referred to as SNA household production.

All other productive activities whose outputs are not supplied on the market and that do not fall under the above mentioned exceptions are covered through the HHSA concept. This type of production is called Non-SNA household production. The HHSA concept however comprises both, the SNA as well as the Non-SNA household production, thus it aims to present the dimension of household non-market production entirely.

The two concepts overlap at the point of the SNA-household production. Both systems cover this type of production. When the two systems are linked to present the extended accounts (comprehensive picture of the entire economy) it is necessary to consider the double inclusion of the SNA household production to avoid double counting. (cp.: Eurostat 2003, p. 8)

SNA Household Production

The SNA household production is not measured within the HHSA, but it is included in the generated value of household production. As SNA household production is already measured in the national accounts, the HHSA just overtake its value. (cp.: Varjonen et al. 1999, p. 20)

The several issues belonging to SNA household production are elucidated below.

Own-account production of goods consists of outputs that are retained for own final consumption by the same institutional unit. The SNA includes the following items generated by households as own-account production of goods:

a) the production of agricultural products and their subsequent storage; the gathering of ber-

ries or other uncultivated crops; forestry; wood-cutting and the collection of firewood; hunting and fishing;

b) the production of other primary products such as mining salt, cutting peat, the supply of water, etc.;

c) the processing of agricultural products; the production of grain by threshing; the production of flour by milling; the curing of skins and the production of leather; the production and preservation of meat and fish products; the preservation of fruit by drying, bottling; etc.; the production of dairy products such as butter or cheese; the production of beer, wine, or spirits; the production of baskets or mats; etc.;

d) other kinds of processing such as weaving cloth; dress making and tailoring; the production of footwear; the production of pottery, utensils or durables, making furniture or furnishings; etc. (SNA 1993, 6.24.)

The ESA provides a more restricted guideline for European countries. Own-account production of goods should only be recorded, if this type of production is significant in relation to the total supply of that good. The ESA merely perceives the production, storage and processing of agricultural goods to be quantitatively important. Hence, point a) and c) are to be included in the satellite accounts, all other types of own-account production of goods are deemed to be insignificant for European Countries. (cp.: ESA 1995, 3.08.)

Own-account house construction and renovation is the own-account production of goods that are retained by their producers for utilisation. The SNA and ESA set the example of own-account construction of dwellings, major renovations or extensions to dwellings produced by households. (cp.: SNA 1993, 6.18.; ESA 1995, 3.08.)

With *own account production of housing services by owner-occupiers* the provision of accommodation by oneself is meant. The notional rents of private owned accommodations as well as substantial repairs, such as re-plastering walls or repairing roofs carried out by owner-occupiers are related to the production of housing services. (cp.: SNA 1993, 6.18, 6.29.)

Domestic and personal services produced by employing paid domestic staff covers the work of servants, cooks, gardeners, etc. that work in and for a certain household in paid conditions. The produced

services are intended for final consumption in that specific household.

Domestic and personal services produced in households are generally excluded from the production boundary and are not recorded in the national accounts. These services only enter the national accounts production boundary, if they are produced by employed paid staff.

With *volunteer work resulting in goods* the communal construction activities undertaken to build dwellings, a church or other buildings for instance are regarded. (cp.: ESA 1995, 3.08.)

Non-SNA Household Production

The non-SNA household production is measured within the HHSA. This type of production is not recorded in the national accounts, but for the purpose of the HHSA it is inevitable to account for these production processes.

According to the purpose of the HHSA the stated concerns of the SNA in respect of the inclusion of domestic and personal services are irrelevant.

The HHSA advances another view of household production that is not isolated from market production, but rather closely involved as stated previously. Hence, another purpose of investigation results, that does not conflict with the inclusion of domestic and personal services. The section of non-SNA household production constitutes a very important and main part in view of the HHSA and consists of the following items:

Informal help to other households means the production of services that are not retained in the producing unit, but that are delivered to another private household. The produced services, hence, do not benefit the household itself, but are rather intended to support another household. This support to other households is offered without any charge. (cp.: Varjonen et al. 1999, p. 18)

Volunteer work resulting in services is the production carried out by individuals working on a voluntary basis in an organisation or association for instance. Produced services may constitute the service of meals, the organisation of bazaars or to coach a junior sports team, etc. (cp.: Varjonen et al. 1999, p. 18)

Own-account production of services are the domestic and personal services produced by households for own final use. They are characterised through the SNA (and ESA) as:

a) the cleaning, decoration and maintenance of the dwelling occupied by the household, including small repairs of a kind usually carried out by tenants as well as owners

b) the cleaning, servicing and repair of household durables or other goods, including vehicles used for household purposes

c) the preparation and serving of meals

d) the care, training and instruction of children

e) the care of sick, infirm or old people

f) the transportation of members of the household or their goods.

(SNA 1993, 6.20.; ESA 1995, 3.09.)

2.4 Measuring Household Production & Compilation of a Satellite Account System

Altogether, household production chiefly consists of non-market conditioned productive activities that benefit out of unpaid work, performed by its household members. The resulting goods are mostly not intended to be supplied on the market and remain in the unit of generation to be consumed.

In consequence, as they are not transacted on the market, the process of household production and the resulting outputs remain kind of invisible and secondly, this entails the absence of any monetary value of the generated outputs.

This poses two main difficulties the HHSA has to deal with. It needs to reveal and quantify the dimension of household production firstly and needs to assign it to a monetary value further on.

In terms of valuing household production certain peculiarities might occur. Information on the quantity and on the value of household production are not as easily available as for the market sector.

First of all the quantification of household's outputs is difficult, due to the absence of a clear outline of the generated outputs. Produced products are not clearly defined. For instance, the output 'cleaned dwelling' may include different items by definition. (cp.: Varjonen et al. 1999, p. 18)

Besides, household outputs generally remain in the same unit they were produced in. Due to this, and as mentioned above, the production process and its outputs are sort of invisible for the regular calculations. Information on the generated outputs need to be derived from additional sources.

The lack of information is resolved by special surveys, supplying the required data on household production. But they, as well, just deliver indirect estimations.

Secondly, the determination of prices may pose difficulties. The absence of market transactions entails the absence of monetary values. Hence, fictitious, estimated values need to be assigned to the generated outputs, so that a value of production can be derived.

These problems arise within the consideration of the valuation approach. Two methods exist. The output and the input approach. The choice of the approach is quite considerable for the valuation process. Eurostat does not provide a precise recommendation for the application of one method. It states, that the current state of knowledge in the field of Household Satellite Accounts give pros and cons for both, the output and the input approach. (cp.: Eurostat 2003, p. 11 et seq.)

As in practise the majority of experts revert to the input approach and as this method is as well applied in the countries being object in this paper, the focus will be drawn to the input method. (cp.: Varjonen et al. 1999, p. 18)

The input approach values household production according to costs incurred within the production process. Production costs emerge from input factors that enter the process to be used up or processed further on. They consist of labour input, intermediate consumption, capital consumption and taxes less subsidies. The costs incurred by all input factors are summed, what leads to the size of the value generated by household production.

The labour input thereby poses the most important input factor to the household production process. It constitutes the factor with the largest share. Its volume is determined by measuring the time invested on household production. By imputing a monetary value to the labour time the value of labour is obtained. In case of the input approach, suitable market wages are applied to value the labour input. The resulting figure constitutes the principal starting point in the input approach. After adding all other input factors the value of total output results. It presents the value of all generated goods and services in households.

The input method presents the simpler model of the two valuation approaches. It requires less data once the required surveys are already available. A great deal of research has been done on

this method so that its strengths and weaknesses are well recognised. Furthermore, applies the SNA this method to value non-market production processes, other than those of households.

However, the input approach poses certain disadvantages. E.g., the survey method does not facilitate productivity measures. The value of household production heavily depends on the wage and time concept adopted for purposes of recording and valuing labour time. (cp.: Eurostat 2003, p. 13; Varjonen 1999, p. 18)

The several calculation steps of the input approach are illustrated below.

Value of labour

+ other taxes on production

- subsidies on production

+ consumption of capital

= **gross value added**

+ intermediate consumption

= **value of total output** (sum of costs)

(cp.: Eurostat 2003, p. 12; Varjonen et al. 1999, p. 19)

The value of labour indicates the value of the time expended on household production. It is obtained by multiplying the two basic modules of evaluating household production, the module of quantification and of monetary valuation.

Quantification is the determination of the volume of household production. The volume is characterised by the time invested on productive household activities. Information on the expended time can be gained from time use surveys. Thereto, activities dedicated to household production need to be defined primarily. This is done by the application of the third party criterion.

The module of *monetary valuation* presents the assignment of a monetary value to the measured volume. This necessarily has to be done to obtain a conceivable measure of household production. The labour input is valued at market prices. Thereto, adequate wages are imputed to the performed activities.

That way, the labour costs of a common market production process were imitated and fictitious personnel costs are computed to the household production process. (cp.: Eurostat 2003, p. 24)

Predication of the input approach

With the broadening of production boundary and the definitions specified in the national accounts

it is facilitated to value household production in a principally similar way to the core accounts. Households are treated as equal producer units and they are capable of being measured in terms of their productive benefit.

The outcome of this calculation is the figure of gross value added. It is capable of being compared to the main indicator of the national accounts, the GDP. The gross value added is an important result of the input calculation, as the dimension of household production becomes conceivable comparing it to the GDP. The share of household production in market production can be drawn. (cp.: Eurostat 2003, p. 42; Varjonen et al. 1999, p. 19, p.33)

By adding the costs of intermediate consumption to the gross value added, the value of total output is gained. This is the sum of all costs incurred during the production process. It represents the fully worth of the performed household activities and describes the volume and amount of the generated outputs.

Database

To evaluate and value the household production process with the input approach, special data for each calculation step is needed. These data are gained from several surveys. Surveys that deliver the required data for the input approach are the time use survey (TUS) and the household budget survey. Additionally, data on current wages and data from the national accounts enter the calculation.

All these are necessary to estimate the value of household production.

3 PROCEDURAL METHOD

As the objective of this work is the comparison of the values of household production in Finland and Germany, the underlying concepts of the household satellite accounts need to be analysed. Thereto the calculation methods that are applied in Finland and Germany are examined. To be able to compare the gained results of both systems with each other, it must be ensured that the procedure of valuing household production is assimilable.

This work will focus on the analysis of the value of labour as the most important input factor of the valuation method. The involvement of this calculation step in the entire valuation process is drawn in figure 3.1 below. The labour factor poses the figure with the biggest share of all inputs to the calculation, so that its evaluation is of particular importance. Other inputs as the consumption parts, taxes, etc. are not to be discussed as detailed in this work.

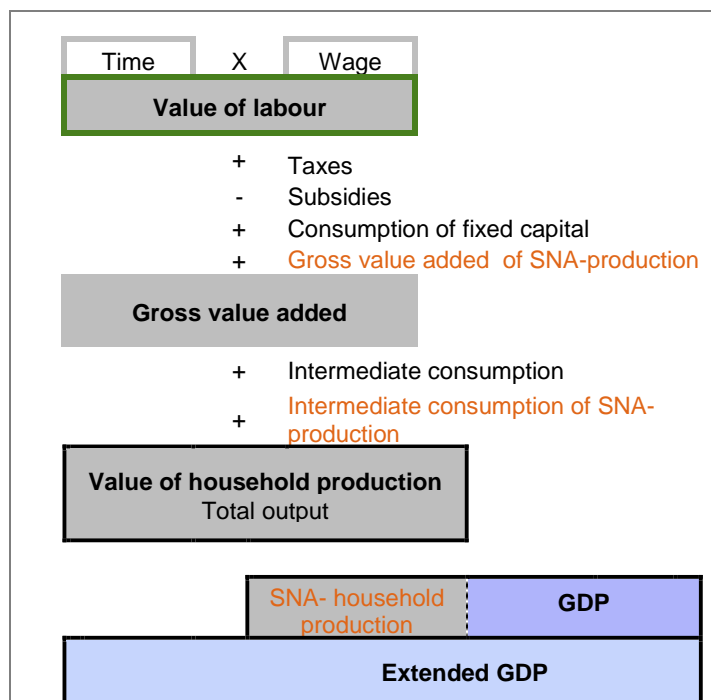
The analysis of the value of labour is separated into two main parts. These parts are the quantitative module (amount of time) and the module on a value basis (wage concept) as already mentioned.

Each module features characteristic methods of calculation. They crucially affect the resulting time volume and value of labour. The applied methods in Finland and Germany are examined and compared within the analysis of the Finnish and German HHSA.

Alongside the analysis of the satellite accounts of Finland and Germany, a calculation of the value of household production in a comparable way is intended further on. Again, the value of labour is emphasised in the comparison.

The calculation is done in terms of the following two main aspects. Firstly, a reproduction of the original values specified in the Finnish and German satellite report is executed. The indicated Finnish and German values of household production are to be reproduced at the best. The main reason for this is the fact that the time use data used in the original Finnish satellite accounts came from household-based data but the recalculation is done using the individual data. Therefore, a sort of calibration of the method is needed.

The second mode of calculation constitutes the recalculation of the Finnish and German household production. By applying the same concept of calculation, comparable results of household production in Finland and Germany are aimed.



source: own illustration

Figure 3.1: Calculation scheme of the value of household production

An overview of the procedural method is given in figure 3.2.

The comparison of the values of household production and the satellite systems in Finland and Germany is based on the Finnish and German reports of the HHSA. The Finnish report³ of the Household Satellite Account System was issued by the National Consumer Research Centre Helsinki in 2006. The German report⁴ was issued by the Federal Statistical Office Wiesbaden in 2004.

At first, the two modules are analysed regarding the procedure of calculation in Finland and Germany respectively. The quantitative module and the module on a value basis can be calculated by applying different methods.

The basic features of each module are introduced and compared between Finland and Germany.

Further on, the original reports, both the Finnish and the German, are reproduced. Therewith, a kind of calibration is aimed. The calculation procedure applied in this work shall be proved. The reliability of the recalculation, which is intended subsequently, is indicated. The reproduction is beneficial for the later recalculation since the quality of the generated results can be ranked.

The conditions and methods of the HHSA of both countries that were exposed in the previous analysis are applied in the reproduction. Thereby the original calculation procedure is to be imitated at the best. This way, almost equal results in comparison to the original reports shall be produced.

Finally, a recalculation is intended to generate comparable results of both countries. Thereto, the obtained information of the analysis are transferred and applied in the recalculation. A new concept is created. It facilitates the presentation of household production of both countries in a comparable way, as far as possible. Potential discrepancies of the original concepts that were exposed in the previous conceptual analysis are eliminated.

The new concept of valuing household production is modified in own discretion but with regard to the conditions in the original reports and established recommendations as well.

- 1) Analysis of the quantitative module
- 2) Analysis of the module on a value basis
- 3) Value of household production
 - Original results
 - Reproduction
 - Recalculation

Figure 3.2: Procedural method

3 "Household Production and Consumption in Finland 2001" by Johanna Varjonen and Kristiina Aalto

4 "Unbezahlte Arbeit und Bruttoinlandsprodukt 1992 und 2001, Neuberechnung des Haushalts-Satellitensystems" by Dieter Schäfer

4 QUANTITATIVE MODULE

Both countries, Finland and Germany, revert to the input approach in terms of valuing household production. The basic input factor to the household production process constitutes the labour. Its quantity is basically indicated by time use surveys. They reveal the magnitude of unpaid work carried out in households. The quantitative module therefore relies on the information time use surveys provide. The methods of collecting these data need to be analysed necessarily when a comparison of the satellite systems is aimed. Hence, the underlying data sets of the satellite accounts need to be observed closely to detect potential divergences.

By now, time use surveys of many countries are available. Countries often use their individual methodologies in collecting time use data. The procedures may vary between countries more or less. Differences in criteria for the sample collection, in the temporal recording periods or in classification and categorisation of activities may involve the incomparableness of survey results between countries. (cp.: Ruuskanen 2004, p. 19)

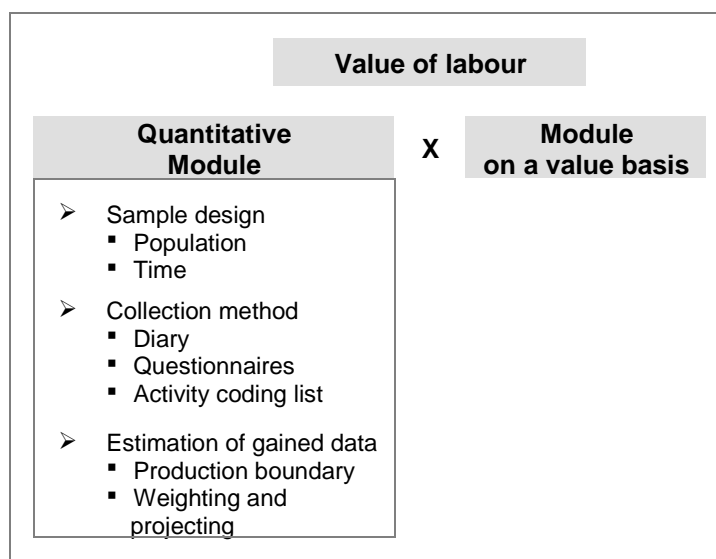
At the European level Eurostat has undertaken the attempt to coordinate the various methodologies of conducting time use surveys. In 2000 a recommendatory concept of the methodology of time use surveys has been published, the Guidelines on Harmonised European Time Use Survey (HETUS). It sets out principles for the collection of time use data in European countries.

But the guidelines are not to be perceived as an utterly standard. The aim rather is to give advice and to present approved methods. Autonomy in taking decision is conceded and is partially discretionary. For instance, a national statistic office can decide to compile additional interview questions or to add time use categories, depending on its specific data needs and adapted to that country's particular time use structure. (cp.: Ruuskanen 2004, p. 20)

Therewith, the fully comparability between country's time use surveys is not ensured automatically by HETUS and it always needs to be verified which individual adaptations have been made.

Finland and Germany mainly follow these guidelines. Their last time use surveys are based on the HETUS recommendations. The time use survey the Finnish HHSA reverts to, was conducted by Statistics Finland in 1999–2000. The German HHSA relies on time use data collected by the Federal Statistical Office in 2001–2002.

Intending to compare household production of both countries necessitates the analysis of the underlying database of the Finnish and German HHSA. The procedure of ascertaining time use data is characterised by certain features that should be considered within the analysis. They are presented in figure 4.1.



source: own illustration

Figure 4.1: Characteristic of the quantitative module

The data set is analysed by means of these features. In this work they are considered as the basic items a time use survey and the determination of the quantitative module rely on. They are introduced in the following.

4.1 Sample design

Population

Time use surveys are conducted to represent the general time allocation of a country's entire population. Data on time use were collected in representative samples and extended to the entire population afterwards. Required information on the labour input are gained this way.

A sample of the respective population is determined. Statements on the whole population are derived from that small cutout subsequently. The composition of the sample affects the survey results and should be analysed therefore.

In terms of the comparison of the satellite accounts it is necessary to analyse which part of the population is covered. Eurostat and HETUS provide recommendations thereon. It is to be analysed how far they are implemented in the HHSA in Finland and Germany. Therewith the underlying population is assessed.

HETUS recommends that every household member aged ten years and older is to be included in the sample. "People living at the same address, sharing meals and sharing household budget are considered as members of the same household. (HETUS 2000, Annex I p.5)"

It is recommended to collect data on the individual level. I.e., the unit of the survey are individuals and not households. Anyway, every member of a household is to be observed.

The samples are restricted to persons with regular abode on domestic addresses further on. This means that individuals living permanently in institutions like care centres, prisons, etc. are excluded from the survey. (cp.: HETUS 2000, p. 8)

The Finnish sample comprises 2,240 households, the German sample about 5,400 households.

The definition of households applied in the satellite accounts is consistent with the concept of the time use surveys of Finland and Germany. They revert to the definition of households that Eurostat recommends as well. Households mainly consist of those persons that share the same living accommodation, that pool their income and that consume goods and services collectively. The time use surveys of Finland and Germany thereby exclude those persons living permanently in institutions.

In Finland the institutional population is consequently as well excluded from the HHSA. (cp.:

Varjonen et al. 2006, p.12) The German HHSA in contrast, covers this part of the population additionally. Since the time use survey does not provide information on the institutional population, rough estimates on their time use are included in the results of the HHSA.

Thereby, approximately the half of the volume that individuals in private households carry out, is estimated for the production of the institutional population. (cp.: Schäfer 2004, p. 962, p. 965)

The Finnish and German time use survey hence are conform, whereas the HHSA diverge, concerning this specific aspect.

Every household member aged ten years or older is included in the samples. This is the suggestion of HETUS and both, Finland and Germany, follow it in their time use surveys. Their results relate to a population aged ten years and over.

Finland completely converts this concept. The covered population in its HHSA is as aged ten years or over. (cp.: Varjonen et al. 2006, p. 16)

The German HHSA again diverges concerning this matter. In its satellite account the household production carried on by household members aged twelve years and older is measured. (cp.: Holz 2005, p. 5; Schäfer 2004, p. 964)

Therewith the Finnish and the German time use survey are conform, but they are again applied in different ways in the satellite accounts.

Time

A second dimension alongside the population that needs to be sampled is time. Statements on time allocation should not only be representative for the entirety of a country's population, but as well for a whole year.

As the survey period could not be of that magnitude, due to the therewith-inflicted burden for the respondents, time needs to be sampled as well. Hence, individuals are only observed on a few days.

The sample should cover all days and seasons throughout the year, as far as possible.

The samples of the Finnish and German time use survey were collected on certain due days uniformly distributed over the year.

Finland thereby relies on the HETUS recommendation that data should be collected on two record days. One of the sample days thereby is a normal weekday (Monday to Friday); the second

sample day covers a weekend-day, either a Saturday or Sunday.

In the German time use survey the respondents recorded their time use on three record days. Data were collected on two weekdays; the third day was a weekend-day.

Household members are asked to record their time use on the same days, i.e. every member of an observed household records his time use in the same time period, on the same days. Finland and Germany both revert to this recommendation of HETUS. (cp.: HETUS 2000, p. 9)

The days are allocated to households/ household members by controlled random procedures. That way a representative coverage of the year by the sample is guaranteed. (cp.: HETUS 2000, p. 9 et seq.) Particular periods of the year, like holidays, Christmas or New Year, constitute difficult partitions of the year, as the time allocation might probably be specific in those seasons. According to HETUS, those seasons should not be omitted in terms of an even coverage of the entire year. (cp.: HETUS 2000, p. 7, p. 10) Finland and Germany sample all seasons throughout the year.

4.2 Collection method

The method of collecting time use data of the previous defined sample needs to be considered, secondly. HETUS provides recommendations on the most reliable methods that are proved in recent surveys. Finland and Germany both apply the recommended collection methods mainly. Small variations and specific divergences are caused by the details only.

Diary

The Finnish and German time use survey both revert time use diaries in terms of collecting the required data. Both countries apply the method that is recommended by HETUS. By using time diaries the respondents record their time use contemporary and do not review. The method of recording the time use in households is the same in the Finnish and German time use survey. No differences can be assessed insofar. Individuals provide information on their specific time use by keeping a time diary. The ascertainment of data on the average allocation of time over the day is facilitated therewith.

In the diary, respondents give particulars on their daily activities and on the time used thereon. The respondents note the performed activities in their own words. The activities are recorded in fixed ten-minute time slots. I.e., a day is divided into several 10-minute intervals. These slots are constantly filled with the particular performed activities. Primary as well as secondary activities are recorded. Thereby the treatment of simultaneous performed activities is arranged. In the case that two different activities are done at the same time, the respondent has to decide which of both is the commanding and prior one. That way it is aimed to draw the practical structure of time use more realistic. For instance there is probably little doubt that activities are not carried out sequent. Activities usually overlap in practice or run simultaneous, like hearing music when preparing meals e.g. With the option of recording a secondary activity, the respondent can procure a suitable image of time use. (cp.: HETUS 2000, p. 10 et seq.)

In the time use surveys of Finland and Germany primary as well as secondary activities are recorded.

Therewith a detailed, fully 24-hour record is achieved and intimately information on the individual time allocation is obtained. Respondents give a comprehensive description of their daily routine. Further on, they specify the place the activities were carried on and the persons that are eventually involved. Information on the location of the current performed activity is obtained, as well as the information with whom it has been carried out.

In the HHSA not all information gained from time use surveys are included. For instance, Eurostat recommends to include primary activities only. Finland and Germany both convert this recommendation. Hence, Finland and Germany only included primary activities in their HHSA, although as well secondary activities are recorded in their time use surveys. (cp.: Varjonen et al. 2006, p.18; Schäfer 2004, p. 963, p.35)

Questionnaires

Household and individual questionnaires supplement the diaries. These are preliminary conducted interviews in face-to-face situations, where the respondents are asked about further context information. Those might be supportive for the following evaluation of time use data. Informa-

tion on *infrequently performed activities, household durables* and *demographic features* are collected by questionnaires.

Information on activities carried out irregular and sporadic help to confront the issue of small recording periods. Within two days mainly often recurring activities are recorded and other seldom performed activities might get lost.

Information on the stock of household durables is supportive to evaluate household production, for instance. The issue how well equipped the household is, might affect the involvement in household production. Besides household durables might be valuables that indicate the prosperity of a household.

Demographic features deliver information e.g. on the educational background, the health status, the social background, the number of children, etc. Knowledge on those issues might as well provide some helpful aspects in the consideration of time use survey results. (cp.: Ruuskanen 2004, p. 24 et seq.)

The two types of questionnaires respectively suit different issues.

In household questionnaires one member of the household is asked on overall aspects of the household. Thereto the interviewed person should be familiar with the circumstances of the household. Information on the structure, budget and living conditions are aimed by household questionnaires. (cp.: HETUS 2000, Annex I p. 8)

Individual questionnaires are on the other hand conducted with the recent respondents. Aspects of respondent's individual context shall be highlighted to support the information obtained by time diaries.

Finland and Germany both apply household and individual questionnaires in their time use surveys as it is recommended by HETUS. The necessary background information are available for both countries consequently. No differences in the availability of background information exist between Finland and Germany.

Activity Coding List

Thirdly, the obtained data need to be categorised. The time use diaries are coded, so that the gained information are capable for entering the data set.

Since the diaries are kept in form of own-word descriptions, the task is to allocate the various

recorded activities to common activity categories. The respondents are not given a prefabricated activity list to orientate on. Categories are built subsequently to ease the handling of the multiplicity of activities. With the aggregation to activity groups the bulk of information becomes more manageable. (cp.: Ruuskanen 2004, p. 32)

The allocation of activities to categories is recommended by HETUS.⁵ Therewith the international consistency and comparability between surveys increases. The recommendations however are implemented differently in Finland and Germany.

Activity categories are allocated to a specific code further on. HETUS provides a coding system for the translation of activities into numeric codes. It is based on 3-digit levels. In the first level the main activity groups are settled. They constitute the overall categorisation. The 1-digit level comprises ten categories. These ten major groups are further subdivided in the second level. The 2-digit level defines some more specific categories that are related to a particular major group. There can be up to nine 2-digit categories per 1-digit group. Finally, each second level category is subdivided into up to ten 3-digit level categories. This way a hierarchical system is compiled to categorise all the activity information out of the time diaries. (cp.: HETUS 2000, Annex VI p. 6 et seq.)

Finland and Germany applied different activity coding lists in their time use surveys. Finland reverted to the coding system provided by HETUS. Germany used an individual coding system slightly differing from HETUS. The assignment of activities to certain activity categories in the Finnish and German time use surveys consequently diverges. Activities are grouped together in partly different ways and the categories of the Finnish and German time use survey are not completely analogues. They include different activities and they are signified with different codes.

The Finnish coding list is aligned to HETUS. It applies the three-digit coding system and the activity categories are signified with identical HETUS codes.

The German time use survey diverges from the recommendation. The basic ideas of the HETUS coding system are followed anyhow. The system is as well based on a three-digit coding method. Acti-

5 see HETUS 2002 Annex VI

vities are allocated to nine main activity categories, which are further subdivided into two levels.

The one-digit and the two-digit level of the HETUS code and the German coding system are conform. Differences of the systems occur in the three-digit level. Activities are grouped together in a different way and are assigned with different codes, partly. The classification of activities is partly rougher and partly even more detailed than the HETUS procedure. The resulting categories can't be compared directly to those that are indicated by HETUS.

4.3 Estimation of gained data

After defining the sample and collecting the data, the obtained information needs to be prepared for final use in the HHSA.

Production boundary

Time use surveys collect data on household activities at large, productive as well as non-productive.

For the compilation of the HHSA it is therefore necessary to separate the productive activities from the entirety of the gained time use information. Only the time spend on the relevant productive activities is taken into account. Other recorded activities that are related to leisure time or personal care, are distinguished, as they are perceived as unproductive. Therewith the portion of the entirety of household performances that meets the HHSA concept is determined.

Eurostat recommends an activity list that indicates those activities that are presumed productive and should be included in the HHSA. The activity list hence presents the boundary of the household production process. (cp.: Eurostat 2003, p. 22)

Finland and Germany mainly revert to the EUROSTAT recommendation. Anyway, deviations of the production boundary from the guideline as well as amongst the countries exist. Which of the various household activities each country considers to be remarkable productive ones, and hence take into account, varies.

The activity lists applied in the Finnish and German satellite accounts are presented in Annex I.

Both countries present special features in their production boundaries and their applied concepts are partly controversial.

The German HHSA comprises two basic time use categories in its boundary of household production. Activities that were related to household production are those allocated to the time use category three - housekeeping and family care ("Haushaltsführung und Betreuung der Familie") and to the category four - volunteer work and informal help ("Ehrenamtliche Tätigkeit, Freiwilligenarbeit, Informelle Hilfe").

The German time use survey provides the basis of the activity classification in the HHSA. The German HHSA mainly follows the recommendations of Eurostat concerning the inclusion of household activities in the production boundary. The established activity list is oriented towards it, but it bears several deviations.

Some activities are included additionally or left out depending on the relevance for the German HHSA. The activity list can be seen in Annex I part A.

The activity list of the Finnish HHSA as well mainly relates to two basic time use categories. These are the categories three and four; household and family care as well as volunteer work and informal help. The Finnish production boundary is likewise oriented towards the recommendations of Eurostat, but features as well slight differences. Activities perceived to be remarkable for the Finnish household production are included or if considered to be irrelevant, left out. The applied activity list of the current Finnish HHSA can be seen in Annex I part B.

Likewise it is important to consider the SNA household production. Those activities that are already covered by the SNA, like housing services produced by owner-occupiers or the production of agricultural goods in households, need to be excluded from the activity list.

When determining the labour input the SNA household production is left out. Its value is taken over from the national accounts, as already mentioned, and added subsequently to the production account. This is done in Finland as well as in Germany.

Weighting and projecting the sample data

Two days and only a part of the population are covered through the sample so that it is necessary to estimate the obtained data. Weighting factors are applied to correct the sample. They are provided

by time use surveys and include such corrections. After implicating the weighting factors the data e.g. can indicate the allocation of time throughout an entire year. (cp.: HETUS 2000, Annex IX p. 6)

To gain information on the allocation of time of the entire population, the data further needs to be projected. The determined average value of time use is multiplied by the figure of population. Productive activities carried on in households are quantified this way.

The figure that is applied in the satellite accounts in Finland and Germany to project the average time use of the sample to the entire population cannot be reproduced out of the information from the satellite accounts. Details on the population are given neither in the Finnish nor in the German HHSA.

An approximate figure can be derived from the details on the population that is included in the sample. Particulars given in the sample may generate a clearer picture of the population that is covered in the HHSA. The figure of the population that is multiplied with the average time use to generate the value of labour is important for the size of the latter.

The weighting factors used to adjust the time use data are provided by the respective time use survey. Data are weighted with those correction factors to ensure the obtainment of suitable results. Weighting the data on time use is necessary, as the loss due to non-responses has to be corrected. The sample that is observed in time use surveys is designed to cover all households and seasons throughout

the year representatively. The non-response deviate it though. Otherwise, some items are sampled disproportionately high as it is presumed that the response rate of certain household types or in particular seasons is too low. The weighting factors correct these biases.

The weighting factors provided by time use surveys are kind of fixed variables that cannot be changed and need to be applied inevitable.

No influences result from those weighting factors, since they are constants that can't be changed. No consideration of the weighting factors is necessary in terms of the analysis.

4.4 Comparison

The direct comparison of the Finnish and German databases reveals that the quantitative modules basically diverge in four aspects. These are illustrated in figure 4.2 below.

The population covered in the HHSA of both countries diverge. The entire population aged 10 years and older, excluding the institutional population is covered in Finland. In Germany the production of this part of the population is included in the HHSA. The average time use of all individuals aged twelve years or over is evaluated. The results on the quantity of time spend on household production hence possess different basics.

The difference of two record days in Finland and three record days in Germany might not have a great impact. It is relativised within the valuation process. Data might only be more representative if

➤	Population	✗	institutional population included in Germany, excluded in Finland coverage of individuals from 10 years on in Finland, from 12 years on in Germany
➤	Time	✗	two record days in Finland, three record days in Germany
➤	Diary	✓	
➤	Questionnaires	✓	
➤	Activity coding list	✗	different numeric codes and diverging classification of activities into activity categories
➤	Production boundary	✗	different items included in household production
➤	Weighting and projecting	✓	
Legend: ✓ comparable ✗ diverging			

source: own illustration

Figure 4.2: Comparison of the quantitative module in Finland and Germany

the average time use is based on three record days and not on two.

The applied diaries and questionnaires for the data collection orientate to the HETUS recommendations and are conform.

The activity coding list draws a more significant distinction. The coding scheme applied in the German time use survey differs partly from the coding system recommended by HETUS and the one applied in Finland. The activity categories of the Finnish and German time use survey cannot be compared with each other directly.

Therefore a recoding of the German time use activity categories is necessary. In this work the German codes have been transformed to international HETUS codes to ensure the consistency of the Finnish and German activity list.

The transcription has been carried out by applying a key that the Federal Statistical Office Germany provides. This key is not published yet. As a result, the procedure of recoding the German categories is not illustrated in detail.

The production boundary of the Finnish and German HHSA diverges as well. In Finland and Germany different activities are grouped under the term of household production. The production boundary hence partly differs from each other. The comparison of the included activities in Finland and Germany is presented in Annex II.

The list indicates the international HETUS codes and clarifies which activities are included in the production boundary of the Finnish and German HHSA. Thereby the German activity categories are already transformed to the international standard so that they are capable for a comparison.

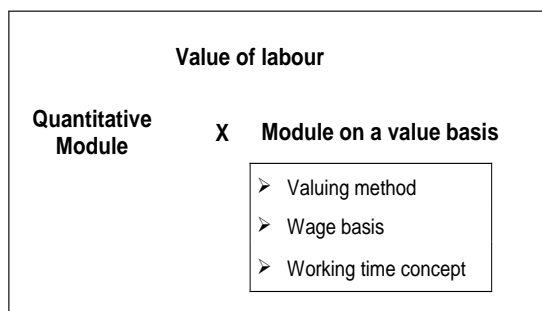
The procedure of weighting and projecting of the data in Finland and Germany is comparable as well. Data are weighted by applying the weighting factors provided by the particular time use survey. Subsequently the gained results on the average time use are projected to an entire year and to the entire population. Therefore the average time use is multiplied by 365 days and multiplied by the population. The total volume of time the population spend on productive household activities over a year is finally determined.

5 MODULE ON A VALUE BASIS

With the module on a value basis a monetary value is assigned to the quantified volume of time expended on household production. This is necessary when it is intended to relate market production to household production. The unpaid work in households needs to be presented in monetary terms.

The estimated quantity of unpaid work by time use surveys constitutes the labour input to the household production process. Labour in monetary terms can be presented by wages. Accordingly, appropriate wages are assigned to the time volumes.

Which wage is applied to value labour time, has a great impact on the final resulting value of household production. The valuation procedure is defined in the wage concept. Therein the considerations on the applied wage are specified. Different possibilities and concepts to value labour time exist. The items presented in figure 5.1 constitute the main questions that are considered in the wage concept. The analysis of the methods of the module on a value basis in Finland and Germany is based on them.



source: own illustration

Figure 5.1: Characteristic of the module on a value basis

Hence, these items are to be examined when analysing and comparing the Finnish and German HHSA.

At first, the valuing method needs to be determined. The valuing method indicates, which or whose wage is applied in the HHSA to value the unpaid work. This is crucial insofar as the wage level varies between occupational groups.

Further on, the wage concept needs to be observed in terms of the applied wage basis and the wor-

king time concept. Wages may rely on the gross or net level and they may be based on whether paid or actual working time. These items have an effect on the wage level and are to be analysed therefore. (cp.: Eurostat 2003, p. 24 et seq.)

The wage concept determines the applied wage on a methodical level. The background of the wage concept can be explained more detailed on a calculative level.

The valuation process of labour input necessitates hourly wages. Information on suitable hourly wages indeed are often not available and need to be calculated at first. The rough calculation idea is presented in figure 5.2.

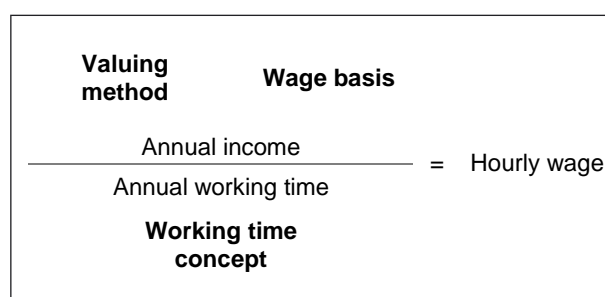


Figure 5.2: Calculation of hourly wages

The starting point of the calculation is the annual income that can be derived from employment statistics. Those give information on the annual gross wage by occupational groups. With the valuing method the decision on a certain occupational group is taken.

The wage basis defines whether the annual income of that specific occupation is taken into account on the gross or the net level. The statistic indicates the gross income. By subtracting employee's average tax burden and contributions to social insurance, net wages are available.

The annual income is converted into hourly wages by dividing it by the annual working time subsequently. The working time concept thereby defines whether paid working time or actual working time is taken into account. (cp.: Schäfer/Schwarz 1996, p. 43 et seq., p. 46)

This way, the three concepts affect the wage that is applied in the valuation process of the HHSA.

Eurostat do not recommend a method explicitly. Which one is the most appropriate one depends on the purpose of the HHSA. For the comparison of satellite systems an analysis of the applied wage

concept is therefore necessary to prove the comparability of the results.

The wage concepts applied in the HHSA in Finland and Germany differ from each other. Each country applied an individual wage concept that represents the magnitude of household production at the best concerning the specific conditions in that country.

As no guidelines exist that provides precise advice on the wage concept that is to be chosen, every country needs to define its own appropriate variant. The applied wage concepts in Finland and Germany are elucidated in the following.

5.1 Valuing method

Household labour refers to the unpaid work household members expend in generating goods and services, either beneficial for their own or other households (volunteering). To be able to analyse that unpaid work in households in an economic context, appropriate wages need to be determined that imitate paid market labour.

There are two assumptions of how to value the unpaid household labour. One approach relies on the opportunity costs imputed by having the “choice” of working in paid or unpaid conditions. The imputation is that time spend on unpaid work reduces the time spend on paid work. This constitutes a cost factor since one sacrifices the money that could have been earned in the same time in which unpaid work has been carried out. The valuation method is the opportunity cost method.

The other approach considers household labour from another point of view. The assumption is, that there are market substitutes for the tasks done in households. Hence, the household can choose between the purchase of market goods and the own-account production of goods. That way the wage of a worker in the market economy carrying out the specific household task would be assumed for valuing labour time. The valuing method is called the market replacement cost method. (cp.: Eurostat 2003, p. 25)

HHSA researchers do not generally apply the *opportunity cost method*, as it does not represent the household labour in an appropriate way. The problem of this method is, that it assumes different wages for actual the same activities, depending on the person carrying out the activity. I.e., if a household member belonging to a high-income group

performs a task, the carried out labour would be of a high value, according to the high market wage. If on the other hand, a person of a low-income group had performed the same activity, the value of the carried out labour would consequently be lower.

However, it is very unlikely that people have the ability to choose which time slice they work in paid conditions. Consequently there is no choice whether to hold down a paid or unpaid job. (cp.: Varjonen et al. 1999, p. 24; Eurostat 2003, p. 25)

The *market replacement cost method* offers a more convenient valuation mode. Market wages of occupations similar to the activities of the household production process are assigned to the latter. Thereby three possibilities for the choice of appropriate market wages exist. (cp.: Eurostat 2003, p. 25; Varjonen et al. 1999, p. 24)

1) The first one assumes the wage of specialised workers in market enterprises. For each household activity a suitable market substitute is defined that implicates the compatible wage. E.g. the household activity of preparing food would be valued with the wage of a cook. For childcare the wage of a nurse would be assigned and so on.

2) The second option is the use of wages of specialised workers at home. These are for instance the wages of gardeners, nurses or private teachers that carry out the services the household purchases on-site in that particular household.

The two options both present the unpaid work in households in a better way than the opportunity cost method does. But nevertheless, the working conditions in a household and the differences in the productivity are not regarded appropriately by using wages of specialists.

3) The widely adopted method is the third option, which applies wages of generalist workers. This method measures unpaid work based on wages of housekeepers. These are domestic employees a household hires. Housekeepers fulfil all tasks the normal running of the household requires.

According to Eurostat the generalist method seems to be the most appropriate one, as the working conditions are very close to the real household circumstances. E.g., activities performed simultaneously are covered and the differences in productivity between households and market enterprises are regarded.

The situation in households however isn't represented completely by this method. Some problems remain. A generalist as well does not perform all

the tasks a common household member carry out in the daily routine. Following, some household activities would not be taken into account. Activities like management, volunteer and community work are problematic in the main. E.g., the management of finances and the maintenance and repairation of dwellings are not usually accomplished by domestic workers. Furthermore, information on wage data of housekeepers is not always available and assuming hypothetical wages may not lead to reliable results. The problem is that the used wages rely on tiny market segments, but are used for a huge magnitude of labour input. (cp.: Eurostat 2003, p. 26; Varjonen et al. 1999, p. 25)

The circumstances in households are nevertheless approached best by the generalist method. Therefore the generalist method is adopted among researchers.

In the German concepts a third method is mentioned. Unpaid work is thereby assessed with average wages. The assignment of average wages of all employees subject to social insurance contribution is plain and comprehensible. Eurostat however does not mention this method.

The analysis of the concepts of the satellite accounts revealed that Finland reverted to the market replacement method and applied generalist's wages to value household production. In the Finnish HHSA the hourly wage of a housekeeper and home helper was opted. Information on the wages of a housekeeper and home helper were obtained from wage statistics in 2001. (cp.: Varjonen et al. 2006, p. 19)

The German HHSA realised a somewhat different method in terms of assigning an appropriate wage to the volume of household production. Since no definite recommendation is made whose wage should be applied preferably and every possibility features certain advantages and disadvantages, household production is calculated several times, applying the different possibilities. Consequently, household production is valued with wages of specialist, generalists and as well average wages. The particular wages lead to different results.

But it is furthermore noted that in terms of valuing household production in a macro-economic context, the generalist approach constitutes the most reliable method. (cp.: Schäfer 2004, p. 968) Information on wages are obtained from the Federal Labour Office. It provides the statistic on annual charges that indicates the annual gross

wages of the several occupational categories. At the time of calculation, results on the year 2000 were available only. They were updated by means of information of the national accounts on the development of salaries to the year 2001.

In terms of applying the generalist approach, the annual gross wage of a housekeeper is adopted from the statistic. (cp.: Schäfer 2004, p. 967) For the specialist's approach, wages of occupational categories appropriate to the various household activities are adopted from the statistic. In total, 21 different occupations like cooks, custodians or kindergarten teachers were used. (cp.: Schäfer 2004, p. 969) Average wages were taken over from the national accounts. (cp.: Schäfer 2004, p. 969)

5.2 Wage basis (gross or net)

Further on, it needs to be analysed on which level household production is valued. The conceptual question of valuing household production on the gross or net level needs to be examined. In the calculation of hourly wages the figure of annual income might be based on both, gross or net wages. They differ in the item of the inclusion of taxes and social contributions borne by employers and employees. The decision for whether gross or net affects the wage level sizably since the share of taxes and social contributions may amount to up to half the wages. The applied method consequently has a great impact on the magnitude of the value of labour and, therefore, needs to be considered in the analysis of the HHSA. Three possibilities exist and they are applied similarly in satellite accounts as they suit different purposes. (cp.: Eurostat 2003, p. 27)

Employee's gross wages represent the total reward of an employee. It includes taxes, e.g. on income, and social security contributions an employee bears. Net wages do not include these items. The net wage presents the gross wage reduced by taxes and the legal social contributions. The gained figure draws the income which is finally available for the household to make its living. The third type is the employer's gross wage. In the most countries employees as well as employers have to pay social security contributions. By adding employer's contributions the employer's gross wage is gained. It presents the total labour costs for employers.

The three possibilities are shown below in figure 5.3.

1) Finland

Wage basis	Hourly wage	Difference	Working time concept
Net wage	€ 7.20	- 27.9 %	paid working time concept
Employee's gross	€ 9.99	100.0 %	paid working time concept
Employer's gross	€ 11.99	+ 20.0 %	paid working time concept

2) Germany

Wage basis	Hourly wage	Difference	Working time concept
Net wage	€ 7.10	- 41.5 %	paid working time concept
	€ 8.85	- 27.0 %	actual working time concept
Employee's gross	€ 12.13	100.0 %	actual working time concept
Employer's gross	€ 15.60	+ 28.6 %	actual working time concept

source: own illustration, according to Varjonen et al. 2006, p. 20; Schäfer 2004, p. 968

Figure 5.3: Hourly wages of housekeepers in Finland and Germany in 2001

In the table the general wage of a housekeeper in Finland and Germany is presented in terms of all three possibilities. The column presenting the differences in percentage indicates the shares of taxes and social security contributions included or excluded in the three wages. The differences between the methods are drawn. The amount of taxes, etc. furthermore varies between countries. The percentage changes are of different size between the countries. The aspect of the working time concept is discussed more detailed in chapter 5.3. For the sake of completeness it is already included in the illustration above.

Which method is applied, is conditioned by the purpose of the HHSA. Eurostat points out that gross wages might be favourable, if the underlying concept is the substitution of market products on the household level. Market prices are calculated gross. Household substitutes should therefore be as well on the gross level to be comparable.

If, in contrast, the objective is to determine a price tag of the actually observable benefits generated in households, net wages would be suitable. As households actually do not pay any taxes and social contributions related to their production process, none should be assumed in the valuation and the net level would be appropriately. (cp.: Schäfer/Schwarz 1996, p. 44 et seq.; Eurostat 2003, p. 27)

The valuation out of the view of 'expenses foregone' entails the gross wage concept.

Household production as an alternative to the purchase of market products would reduce household's expenditures. By producing goods on its own, the household does not require products from the market anymore. This would lead to the assumption that household production is of exactly the value that production of the not purchased market goods is worth. In other words, the value of the carried out activities comes up with the expenses the household saved by the foregone market substitutes.

Calculated prices of market substitutes include taxes and social security contributions. Accordingly, the application of the approach, which values household production at a market level, requires the monetary valuation of the labour input with gross wages.

The valuation out of the view of 'changes in total disposable income' entails the net wage concept.

This concept assumes households to enhance their disposable income by carrying out household production. The own-account production of consumer goods increases the household income. The household achieves additional welfare supplementing its normal income e.g. from paid work.

To present the actual size of this generated welfare it is to be valued at the net level. As household members carrying out productive household activities do not pay any taxes or social security contributions, they should not be included in the valuation, either. The labour input is then to be valued with net wages that excludes these items. The effective value of household production is drawn this way. (cp.: Eurostat 2003, p. 27)

In the national accounts gross wages are used to value the non-market services of general government and of non-profit institutions serving households. The output of these market units is as well measured by applying the input approach. Labour costs are taken into account gross of income tax and other charges. They also include social security contributions paid by employers. Households, generating as well non-market outputs, might be treated in the HHSA like their counterparts are handled in the national accounts concerning the

measurement of their outputs. Household production would then be valued on the base of gross wages as well. But, an item of review mentioned by Eurostat, is the fact that households, unlike their counterparts, actually do not pay such contributions. This must be solely assumed within the valuation process. Therefore, the concept of net wages is equally conceivable and both concepts are qualified to value the labour input. (cp.: Eurostat 2003, p. 27)

The analysis of the HHSA revealed the particular wage types applied in Finland and Germany.

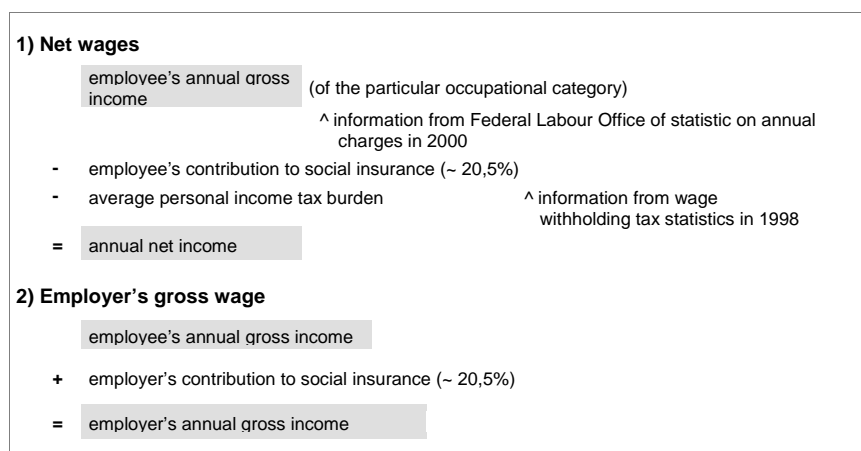
In Finland the valuation of household production is done using employee's gross wages. An additional valuation process is carried on besides, applying employer's gross wage and as well net wages. Hence, the value of household production is presented in all three modes. The basic concept however reverts to employee's gross wage. Finland therewith decides for the middle course since the wage level ranges between the net wage and employer's gross wage. They constitute the lower and upper limit. Gross wages used in the Finnish HHSA were obtained from wage statistics of 2001. An employee's hourly gross wage in Finland for a housekeeper and home helper was indicated at € 9.99 in 2001. Average income taxes for the net wages were received from the Taxpayers' Association of Finland. The calculations were based on a monthly income of 1,500 euros and on average municipal and church tax rates (cp.: Varjonen et al. 2006, p. 20)

In the German HHSA no decision on a precise wage type was made. Household production in the German HHSA is valued on the basis of different possibilities. Thereby the net wage method is adopted likewise the method of employer's gross wage.

Information on the wages applied in the German HHSA were obtained by the combination of several statistics and sources. The Federal Labour Office provides information on employee's gross wages. Net wages and employer's gross wages are derived therefrom. The gross wage is increased or reduced by the shares to social insurance that employers or employees have to bear. The contributions of employers and employees to the social insurance both made up 20.5% in 2001. (cp.: Schäfer 2004, p. 967) Employer's gross wage is calculated by adding this percentage. The net wage is gained by subtracting the social insurance contribution and, furthermore, the income tax burden. Thereby an average share of income tax is subtracted, since the tax burden is income-dependant. It includes solidarity tax contribution, but excludes church tax.

The German HHSA reverted to information from the wage withholding tax statistics of 1998 and income tax tables to estimate the share of the average tax burden. In 2001 the net wage of a housekeeper in Germany amounted to € 7.10. The employer's gross wage is indicated at € 15.60. (cp.: Schäfer 2004, p. 968)

Since information on the required hourly wages are not provided by statistics as such, neither gross



source: Schäfer 2004, p. 967

Figure 5.4: Calculation of net and gross wages in the German HHSA

nor net, they need to be calculated. The starting point of the calculation is annual incomes. They are either gross or net depending on the intended mode of the hourly wage. The procedure and the sources of the calculation in the German HHSA are presented below in figure 5.4.

5.3 Working time concept

The working time concept deals with the assumed annual working time applied in the calculation of hourly wages. As already mentioned, hourly wages are calculated by annual income over annual working time. Thereby, two concepts for the annual working time exist: the paid working time concept and the actual working time concept. They indicate different approaches by defining the volume of the annual working time. The volume has a crucial impact and affects the magnitude of the calculated hourly wage. The difference of both concepts dues to inclusion of paid public holidays, annual leave and sick leaves in the paid working time, whereas these times of absence are excluded from the actual working time. (cp.: Schäfer / Schwarz 1996, p. 44)

Paid working time refers to the amount of labour time agreed in the labour contract. It is the time employees make their labour force available to employers.

Thereby it is irrelevant, as long as this time is paid, whether employees do or do not actually work. Hence, the paid working time concept includes paid hours actually worked and excludes the time that is actually worked but not paid (e.g. overtime). The concept further includes paid hours of absence, i.e. time that is paid, although no work has been carried out (e.g. holidays, sick leaves, study leave).

Actual working time, in contrast, does not include those paid times of absence. The concept

just provides the volume of time effectively spent on productive activities. (cp.: Schäfer/ Schwarz 1996, p. 45 et seqq.)

Consequently, the calculated hourly wage would be lower by including “non-working time” (calculation on the basis of paid working time) and higher when excluding it (calculation on basis of actual hours worked). This due to the differing volume of working time that is applied in the calculation. The inclusion or exclusion of “non-working time” leads to different quotients that affect the resulting hourly wage.

In figure 5.5, the rough calculation idea and the impact of the chosen working time concept on the hourly wage is illustrated.

In the figure an example on the calculation of hourly wages by applying the two different working time concepts is presented. The annual income and the annual working time are assumed to imitate the calculation procedure.

The annual paid working time assumed in the table includes the time of absence that is paid for. For the derivation of the actual working time, 20% of the paid working time is assumed as time of absence. (cp.: Schäfer 2007) In the calculation of the hourly wage, applying the actual working time concept, these 20% are introduced to the calculation. In consequence of this percentage inclusion of time of absence, the volume of hours worked decreases.

The higher amount of working hours, as it is introduced by the paid working time concept, minimises the calculated hourly wage. In contrast, a lower amount of time raises the wage.

The wage level consequently depends on the working time concept, besides others. As a higher wage accounts for a higher labour value, the applied working time concept is a relevant item that needs to be considered in the analysis.

Working time concept	Annual income	:	Annual working time	=	Hourly wage
paid working time	20 800 €		2 080 h		10.00 €/ h
actual working time	20 800 €		1 664 h		12.50 €/ h

source: own exemplary calculation, according to Schäfer 2007

Figure 5.5: Effects on the hourly wage due to the working time concept

The choice of the working time concept depends on the purpose of the HHSA. Data from time use survey provide information on the actual working time. That means, the information point out the time household members actually spend on productive activities. There are no “non-working times” included in the data.

If the purpose of the HHSA hence is to value household production in terms of a market substitute, the actual working time concept would be preferable. The higher wage would consider the conditions on the market, where time of absence is paid to employees. As no time of absence is included in the underlying data, the wage based on actual working time compensates this discrepancy. On the other hand, the paid working time concept would be more appropriate, if the purpose of the HHSA is to represent the real general conditions in the institutional unit - household. (cp.: Schäfer/Schwarz 1996, p. 45 et seq.)

In the Finnish HHSA the item of the working time concept is not discussed as detailed as in the German HHSA. The Finnish HHSA states that the indicated gross wage of a housekeeper in Finland includes holiday compensation and absences of work like sickness. The applied working time concept in the Finnish HHSA therefore is the paid working time concept. (cp.: Varjonen et al. 2006, p. 20)

Germany revealed profound thoughts on the working time concept in its satellite account. Again both options of working time concepts were gone through in the HHSA since each method features its own advantages.

The wage of a housekeeper based on the paid working time concept indicated in the German HHSA amounts to € 7.10 (net). The payment of absence from work is excluded in the hourly wage. The hourly wage according to the actual working time concept amounts to € 8.85 (net). This wage includes the payment of time of absence and is therefore somewhat higher. (cp.: Schäfer 2004, p. 968)

These hourly wages, applied in the German HHSA were calculated, since the information of the relevant occupational category for the different wage concepts are neither available from labour agreements as such, nor can be derived directly from survey results. The calculation procedure is shown in figure 5.6.

The annual income is divided by the particular annual working time, paid or actual working time. Information on the annual paid working time of the specific occupational category are gained from a sophisticated interpretation of the micro census.

The annual actual working time is derived therefrom by subtracting the average paid public holidays, leave days and sick leaves. (cp.: Schäfer 2004, p. 967)

A percentage of the time of absence from work is estimated and charged against the paid working time. Approximately 20 % of the paid working time is presumed to be times of absence from work in the German HHSA. These 20 % are allowed for in the calculation and the resulting wage is the hourly wage including time of absence.

1) Paid working time concept			
annual income			
paid annual working time	=	hourly wage	(excluding the remuneration of time of absence from work)
2) Actual working time concept			
annual income			
actual annual working time	=	hourly wage	(including the remuneration of time of absence from work)
<i>concrete example in the German HHSA:</i>			
hourly wage (paid)	x	annual paid working time	=
€ 7.10		(1 - 0,2) x annual paid working time	hourly wage
0.8	=		€ 8.85

source: own example

Figure 5.6: Calculation of hourly wages in terms of the working time concept in the German HHSA

5.4 Comparison

The wage concept of the Finnish HHSA defines the wage of a generalist, more precisely the wage of a housekeeper and home helper. It assigns gross wages excluding employer's contribution to social insurance to be used, based on the paid working time concept. Information on the wage are obtained from Statistics Finland. They provide information on the hourly wages of housekeepers and home helpers in Finland. Particulars on the precise calculation of the finally applied wage are not given in the Finnish report of the satellite account.

In the German HHSA nine different wage concepts are taken into account. These nine concepts are presented in the figure 5.7 below. However, the concept applied basically defines net wages of generalist workers, based on the paid working time concept.

The basic concept of the German HHSA (framed green in the table above) is assumed to be

Valuing method	Net wage		Employer's gross wage
	paid working time concept	actual working time concept	
Generalist method	net wage of a housekeeper based on paid working time	net wage of a housekeeper based on actual working time	gross wage of a housekeeper
Specialist method	net wage of specialists based on paid working time	net wage of specialists based on actual working time	gross wage of specialists
Average wage method	average net wage of all employees based on paid working time	average net wage of all employees based on actual working time	average gross wage of all employees

source: own illustration, according to Schäfer 2004, p.965 et seqq.

Figure 5.7: Wage concepts of the German HHSA

➤ Valuing method	✓	employee's gross wage applied in Finland net wages applied in Germany
➤ Wage basis	✗	
➤ Working time concept	✓	
Legend: ✓ comparable ✗ diverging		
source: own illustration		

source: own illustration

Figure 5.8: Comparison of the module on a value basis

most appropriate in terms of relating household production to the GDP in Germany. The calculation of household production presented in the German report is almost completely related to this wage concept. The other eight concepts are not discussed as detailed and only the resulting values of household production according to the different applied wage concepts are stated. Since the various wage concepts identify different wages that diverge in their wage level, the results of the valuation process differ from each other analogous.

The basic wage concepts applied in the Finnish and German HHSA are presented recapitulating below in figure 5.8.

In their main wage concepts⁶ Finland and Germany both apply the generalist approach and take a housekeeper's wage into account. Both satellite accounts agree in this respect. The applied wage basis, in contrast, diverges in Finland and Germany. In its main concept Finland applies employee's gross wages, whereas Germany presumes net wages to be most suitable for valuing household production. In the third point, the working time concepts, Finland and Germany again agree. Both countries use wages based on the paid working time concept.

Consequently, Finland and Germany apply different wage concepts in their HHSA. The resulting figures of the value of labour, and further on the resulting value of household production, cannot be compared to each other directly.

⁶ Especially Germany applies several different concepts. At this point the main concept applying housekeeper's net wages based on the paid working time is to be focused.

6 VALUE OF HOUSEHOLD PRODUCTION

6.1 Original results

The previously elucidated modules just constitute the first basic parts of the calculation process of household production. By combining both modules, the value of labour is gained. The value of labour constitutes an intermediate result. Within the input approach, other calculation factors are added. Therewith the gross value added, that can be compared to the GDP, and the total output of household production are generated.

The values of household production presented in the original Finnish and German HHSA are shown below in figure 6.1.

The value of labour in Finland amounted to € 52 355 million in 2001, basing on the gross wages. By taking the other calculation factors into account a gross value added of € 62 844 million results. The total output of household production is stated at € 81 588 million. (cp.: Varjonen et al. 2006, p. 30)

In Germany the value of labour accounts for € 684 billion. This figure is based on the main wage concept. It was introduced in the previous section and defines housekeeper's net wages based on the paid working time concept. In the German HHSA this concept is conceived to be preferable in terms of comparing household production to the GDP. It is further more stated as the most discreet valuation variant. (cp.: Schäfer 2004, p. 967) The other results of the valuation process, the gross value added, accounts for € 820 billion and the total output amounts to € 1 121 billion, according to this wage concept.

calculation entries - input approach -	Finland	Germany
	in billion €	
value of labour	52.4	684
+ SNA household production		
Personal and domestic services produced by employing paid staff	0.07	3
Own-account production of housing services by owner-occupiers	4.27	56
Own account house construction and renovation	0.63	*
Own-account production of goods	0.09	*
+ Taxes on production	0.20	6
- Subsidies on production	0.70	*
Net value added	56.9	748
+ Consumption of capital	5.9	72
Gross value added	62.8	820
+ Intermediate consumption	18.7	301
Total output	81.6	1 121

* no specifications on that entry are given in the report

source: according to Varjonen et al. 2006, p. 30; Schäfer 2004, p. 971

Figure 6.1: Value of Household Production as indicated in the original HHSA

These differences in the magnitude of the figures due to the size of the countries. To make the magnitude of household production in Finland and Germany more conceivable, it is related to market production in the following. The percentage of household production in the GDP of the national accounts in Finland and Germany is presented in the figures 6.2 and 6.3.

Household production makes up 40.3 % of the GDP. I.e., the national account's GDP would increase by 40 % if the production boundary of the SNA would be enlarged to include the entire household production. By now, only 13 % (€ 8.3 billion) of household production is already covered through the national accounts. With the inclusion of the entire household production the extended GDP would amount to € 190 billion. One third

thereof constitutes household production. (cp.: Varjonen et al. 2006, p. 30)

In Germany as well, 13 % of household production are already covered by the GDP. The not included part of household production makes up 34 %. When composing the figure of extended production, household production would account for 30 % of the entire productive performance. (cp.: Schäfer 2004, p. 974)

Although the absolute values of household production are lower in Finland than in Germany, the percentage of household production in Finland is somewhat higher than in Germany.

Further on, the difference of the magnitude of household production in Finland and Germany is relativised by relating the figures to the population.

GDP € 135.5 billion		
GDP (excluding SNA household production) € 127.2 billion	SNA household production € 8.3 billion	Non-SNA household production € 54.5 billion
100 %		40.1 %
Extended GDP € 190.0 billion		
Market production 66.9 % € 127.2 billion	Household production 33.1 % € 62.8 billion	

source: own illustration

Figure 6.2: Household Production Finland 2001

GDP € 2 074 billion		
GDP (excluding SNA household production) € 1 967 billion	SNA household production € 107 billion	Non-SNA household production € 713 billion
100 %		34.4 %
Extended GDP € 2 786		
Market production 70.6 % € 1 967 billion	Household production 29.4 % € 820 billion	

source: own illustration

Figure 6.3: Household Production Germany 2001

	Finland	Germany
Population in 2001	5 194 901 ^{*1}	83 418 000 ^{*2}
Gross value added (entire household production)	€ 12 097.25	€ 9 830.01
GDP	€ 26 083.27	€ 24 862.74
Extended GDP	€ 36 574.33	€ 33 398.07

^{*1} figure stated by Statistics Finland (cp.: Varjonen 2007)
^{*2} figure indicated in the micro census Germany (cp.: Moser 2007)

source: own calculation

Figure 6.4: Production per capita

The values of production per capita are presented in figure 6.4.

The gross value added of household production, comprising SNA as well as non-SNA household production, accounts for € 12 097 per capita in Finland. The German figure amounts to € 9 830 per capita. In consequence, the results suggest that the Finnish population is more engaged in household production than the German. The difference is about 20%.

As well, the market production of Finland is somewhat higher than in Germany. Hence, the extended GDP (market + household production) indicates a general higher productivity in Finland.

But as it is stated in the previous sections, the results of the Finnish and German satellite accounts rely on different concepts. According to the analysis of the methods, the applied concepts in Finland and Germany partly diverge. Consequently, the presented values cannot be related to each other directly.

To facilitate a reliable comparison of the values of the Finnish and German household production the figures need to be recalculated.

6.2 Reproduction

The analysis of the Finnish and German satellite accounts focused on the value of labour. In the calculation this item is emphasised as well. With the application of the original concepts, which were identified in the previous analysis of the satellite systems, the value of household production of Finland and Germany can be reproduced. Hence, the information gained from the analysis are used

to reproduce the original values as precisely as possible.

Within the reproduction time use data of both countries are recalculated. Calculation factors of the input approach other than the labour are not reproduced exactly within this work. Their values are just taken over from the original reports when generating the total output of household production.

The actual reproduction is just done on the first level (calculation of the value of labour) since this calculation factor of the household production valuation process is emphasised. The further calculation steps and reproduction of the total output of household production is just done for the sake of completeness.

6.2.1 Calculation of value of labour

To reproduce the value of labour, the methods of the quantitative module and the module on a value basis that were applied in the original HHSA are adopted. The specific methods that each module in the Finnish and German HHSA feature, were elucidated above. The obtained information from the analysis are used to reconstruct the calculation mode of the original HHSA.

The data of the Finnish and German time use surveys are reanalysed at first. This is done by using the statistical program SPSS. Thereby the specific features of the quantitative module of each country are adopted. Special attention has to be drawn to the item of population and the activity list. The other items are taken over within the reproduction since the original data set is applied. I.e., the collection method does not change anyhow when reanalysing time use data for instance.

By contrast, the population and the activities covered by the HHSA need to be filtered out of the pack of data that time use surveys provide. According to the specifications in the original concepts, the population from ten years on (Finnish system), or from twelve years on (German system) is taken into account in the reproduction. The bulk of data need to be filtered in respect of this.

Likewise, the productive activities assigned to household production are filtered out of the bulk of data. The production boundaries defined in the Finnish and German report are used therefore. The particular production boundaries are presented in Annex I.

Subsequently, the data are weighted with the respective weighting factors and reanalysed with the statistical program SPSS. The results of the calculation, the average time an individual spend on household production per day are presented in Annex III. Therein, information on the detailed time use on the several activity categories are given. They are accumulated to obtain the quantity of time spend on household production in Finland and Germany respectively. The time spend on household production in total is indicated, as well as the time spent on non-SNA household production. Only non-SNA household production is taken into account when calculating the value of labour. The values of the SNA household production are taken over from the national accounts. They are added subsequently.

The obtained average time use per day has to be projected to the entire year and the whole population primarily. According to the original reports, the population in 2001, aged ten/ twelve years and over, is applied to project the time use onto the entire population. Thereby, the institutional population needs to be considered. It is not allowed for in the HHSA of Finland. In Germany the institutional population is however covered. According to the German HHSA, half of the unpaid work carried on in private households is thereby estimated for the institutional population. Within the reproduction, this share is consequently added to determine the quantity of time spend on household production.

Information on the population regarding the institutional population and the appropriate age limit are not provided in the reports on the original HHSA. They necessarily have to be calculated for the reproduction. For Finland the particular population is calculated by deducting the number of individuals below ten years and the institutional population from the entire population. The required figures of the population have been provided by Statistics Finland. (cp.: Varjonen 2007; Statistical Yearbook Finland 2002) A concrete figure on the institutional population indeed is not available. By deducting the population living in private households from the entire population, the figure can be derived, however.

For Germany the entire population is reduced by the figure of the population younger than twelve years. The micro census and the Statistical Yearbook of Germany provide information on

this. (cp.: Moser 2007; Statistical Yearbook Germany 2003) Since no results on the time use of the institutional population are provided by time use surveys, this part needs to be deducted from the entire population as well. In the German HHSA, an estimated figure on time use of this part of the population is added subsequently to the value of labour. Information on the institutional population in Germany are consequently necessary as well. Its figure is calculated likewise the Finnish one.

The calculation for the particular population of Finland and Germany that is required for the reproduction of the value of labour is presented in figure 6.5.

	Finland	Germany
Total population	5 194 901	83 418 000
Population living in private households	5 120 011	82 575 000
Institutional population	74 890	843 000
Percentage of total population	1.44 %	1.01 %
Population younger than 10/ 12 years	608 569	9 403 000
Percentage of total population	11.71 %	11.27 %
Resulting particular population	4 511 442	73 172 000

source: own calculation

Figure 6.5: Calculation of the population in Finland and Germany

With the information on the population the annual time use on household production of the entire population in Finland and Germany can be determined. The quantity of time spend on household production on average is projected to the entire population and a whole year. The values are presented in table 6.6.

Further on, the indicated wage concepts are used to value the determined quantity. The particular wage concepts were presented previously. They are applied within the reproduction. The German HHSA features nine different wage concepts, but only the basic concept will be adopted in the reproduction.

By multiplying both modules the value of labour of Finland and Germany is gained. The calculation and the results are presented in figure 6.6.

The reproduced value of labour in Finland and Germany accounts for € 52 165 million and € 688 935 million. Therewith the reproduced values are alike the original results. The difference of the Finnish value to the original one amounts to 0.4 %. The reproduction of the German figure produces a somewhat higher value of labour. Its value is increased by 0.7 % of the original figure.

6.2.2 Value of household production

For the reproduction of the gross value added and the total output of household production, the other calculation factors of the valuation process are added to the value of labour. The introduced items

are the SNA household production, taxes, subsidies and the consumption parts. Their values are taken over from the original satellite accounts and are not reproduced within this work. The calculation procedure is indicated in figure 6.7 below.

	Finland	Germany
Quantity (min per day)	190.26	216.74
x Time (days)	365	365
x Population (in 2001)	4 511 442 * ¹	73 172 000 * ²
/ 60		
= Total amount of time (in hours/ year)	5 221 610 642	96 477 403 953
x Hourly wage	€ 9.99	€ 7.10
= Value of labour (in billion)	€ 52.16	€ 684.99
+ Production of institutional population * ³	-	€ 3. 95
Original Value (in billion)	€ 52.36	€ 684
<i>Difference</i>	- 0. 37 %	+0. 72 %

*1 population excluding institutional population and aged 10 years or older

*2 population excluding institutional population and aged 12 years or older

*3 half of the time the population in private households spend on household production is assumed for the institutional population in the German HHSA

source: own calculation

Figure 6.6: Reproduction of the Value of Labour in Finland and Germany

calculation entries - input approach -	Finland	Germany
	in billion €	
Value of labour	€ 52.16	€ 688.94
+ SNA household production		
Personal and domestic services produced by employing paid staff	0.07	3
Own-account production of housing services by owner-occupiers	4.27	56
Own-account house construction and renovation	0.63	*
Own-account production of goods	0.09	*
+ Taxes on production	0.20	6
- Subsidies on production	0.70	*
+ Consumption of capital	5.93	72
Gross value added	€ 62.68	€ 825.94
original value	€ 62.84	€ 820.00
<i>Difference (to original)</i>	-0.25 %	+0.72 %
+ Intermediate consumption	18.74	301
Total output	€ 81.42	€ 1 126.94
original value	€ 81.59	€ 1 121.00
<i>Difference (to original)</i>	-0.21 %	+0.53 %

*no specifications on that entry are given in the report

source: own calculation, according to Varjonen et al. 2006 and Schäfer 2004

Figure 6.7: Reproduction of the Total Output of Household Production

The reproduced gross value added of Finland amounts to € 62 653 million. The deviation from the original report accounts for 0.3 %. An equally low variation of only 0.2 % is valid for the reproduction of the total output. Its figure accounts for € 81 397 million in total.

The reproduced gross value added for Germany accounts for € 825 935 million. It diverges by plus 0.7 % from the original value. The reproduced total output still diverges by plus 0.5 %. Its figure amounts to € 1 126.94 billion in total.

Hence, the reproduction generates values that approximate the results of the original satellite accounts of Finland and Germany. The deviations in percentages from the original values are justifiable. The mode of calculating household production applied in this work is consequently suitable to recalculate comparable values of the Finnish and German household production. The reproduction has proved an acceptable quality of the calculation mode for the recalculation. Consequently it is ensured that the recalculation will yield reliable values of household production in Finland and Germany.

6.3 Recalculation

6.3.1 New valuation concept

Since the results of the HHSA of Finland and Germany that are presented above, rely on diverging valuation concepts, the generated values of household production are not directly comparable with each other. To gain comparable results for Finland and Germany, the calculation methods need to be aligned. This is realised within this section. The value of labour is thereby emphasised once again within the recalculation. To value household production in Finland and Germany in an assimilable way, a consistent valuation concept is to be applied in both countries. By using the same methods of calculation, the results become comparable. Therefore a new and consistent concept for Finland and Germany is defined firstly.

The basic items the Finnish and German original concepts differ in are eliminated in terms of the new calculation concept of the value of labour. Basically, the population, the production boundary and the wage concept as such need to be redefined and conformed to each other, to facilitate a compa-

table recalculation of the original concept. According to the previous analysis, the applied valuation concepts in the original HHSA of Finland and Germany mainly diverge concerning the above mentioned items.

Within the recalculation the time use surveys of each country as the underlying data set are reanalysed. Since the data set remains the same in the recalculation, items like the collection method and sample design for instance, are taken over automatically. They are conditional on the particular time use survey and cannot be revised afterwards within a recalculation. However, the Finnish and German time use survey are mainly orientated to HETUS and the provided data therefore rely on almost conform ascertainment methods.

Population

The population that is covered in the recalculation of the HHSA is in conformity with the population that is covered in the time use surveys of both countries. The entire population excluding the institutional population is taken into account. The average time use of all individuals aged ten years or over is evaluated.

In terms of the new concept no changes of the covered population have to be introduced to the Finnish system. Finland originally takes the population of ten years and over into account in its HHSA. For Germany, however, a few more adaptations are necessary.

Total population	83 418 000
- Institutional population	843 000
- Population under 10 years	7 636 400
= Population applied in recalculation	74 938 600
<i>(Population applied in reproduction:</i>	<i>73 172 000)</i>

source: own calculation according to Statistical Yearbook Germany 2003; Moser 2007

Figure 6.8: Calculation of the German population applied in the new concept

The age limit of the covered population is reduced from twelve to ten years. When projecting the average time use to the entire population this adaptation needs to be considered. The figure of the population has to be modified in respect of the age limit of ten years.

Information on the population younger than ten years in 2001 are obtained from the statistical yearbook. This part of the population amounts to 7 636 400 people. (cp.: Statistical yearbook Germany 2003)

The calculation of the adapted figure on the German population in 2001 is presented in figure 6.5.

Production boundary

The production boundary defined for the new concept is mainly orientated towards the Eurostat recommendations. The established production boundary of the recalculation can be seen in Annex IV part A. The production boundaries of the Finnish and the German HHSA are converted in terms of fully consistency. Within the alignment, activity categories of the original satellite accounts are partly left out or are included additionally in the production boundary.

For Germany the adaptation is little more complicated, since the activity coding scheme that is applied in the time use survey is differing from the international standard. The coding scheme applied in the German time use survey partly diverges from the coding system recommended by HETUS and the one that is applied in the Finnish time use survey. For the alignment of the German production boundary a recoding of the German activity categories is necessary. This way, the consistency of the Finnish and German activity list in the recalculation is ensured.

The direct comparison of the Finnish and the recoded German activity list is shown in Annex IV part A.

The German activity categories have been transformed into HETUS codes to ease the definition of the new production boundary. A key that was provided by the Federal Statistical Office Germany was used for the transcription. Therewith a unique concept for the determination of the quantitative module in the recalculation is defined. The quantity of time spend on household production in Finland and Germany according to the new valuation concept is presented in Annex IV part B.

Wage concept

A consistent wage concept for the recalculation of the Finnish and German HHSA has to be defined

as well. The new concept defines net wages of housekeeper's based on the actual working time concept.

This concept has been chosen in this work, as the dimension of household production should be presented most conceivable. The assumption is, that household production is more conceivable than it is related to market production. The chosen wage concept constitutes an appropriate basis of relating household production to the GDP - the most important figure of the national accounts.

Hence, the new concept reverts to the market replacement method. Household production is to be related to market production. This method is most preferable insofar as it assumes the dislocation of unpaid work in households, to paid labour force on the market. Thereby the generalist method is chosen further on. The average wage of a housekeeper is used to value the labour input. According to the literature, this method represents the conditions of household production best. Since generalist's wages are obviously lower than those of specialists, the method constitutes as well a discreet version of valuation and sets a minimum level. (cp.: Eurostat 2003, p. 26; Schäfer/ Schwarz 1996, p. 49 et seq.)

Further on, net wages are defined, since households actually do not pay any taxes and social contributions when carrying out productive activities. Therefore, such burdens should not be assumed. Although wages in the national accounts generally are gross of income tax and social security contributions, taxes in the national accounts are only accounted if they are actually paid. Since this is not true for households, net wages are appropriate and represent the real conditions.

In this work, the fact that net wages bear more inaccuracies is ignored. Net wages need to be calculated as no exact information are available. Thereto, average shares of household's income tax burden need to be estimated. Consequently, only approximate figures results when deducting these estimates from gross wages. Gross wages would be more reliable in this respect. Anyway, net wages are to be applied in the recalculation as they as well present a more sensitive calculation mode. The reports on the HHSA of Finland and Germany both provide information on housekeeper's net wages in the particular country.

The applied working time concept in the recalculation is the actual working time concept. It

constitutes the method that is most convenient in terms of relating household production to market production according to the literature. The actual working time is based on estimations only, as well. A percentage of time of absence from work needs to be determined.

Germany presumes a percentage of 19.8 %. Information on wages based on the actual working time concept are stated in the German HHSA.

In Finland the actual working time concept isn't as common and no particulars on the actual working time are provided by the Finnish HHSA. Accordingly, the wage has to be calculated. For Finland the same percentage of time of absence from work as assumed in Germany is adopted. A share of 19.8 % of time of absence is included in the wage on the paid working time concept to derive the wage based on actual working time. The calculation is presented in figure 6.6 below. Housekeeper's net wages based on the actual working time accounts for € 8.98 in Finland and € 8.85 in Germany. The indicated wages are applied in the recalculation.

Although uncertainties might be introduced with the actual working time concept, it however features certain advantages. The time use of households indicated by time use surveys is filtered before entering the HHSA production boundary. I.e., only actually productive activities are taken into account. The time volume on household produc-

tion is calculated without times of absence in the HHSA. Breaks, for instance, that might interrupt productive processes in households are recorded in special categories (personal time use categories) that do not enter the production boundary of the HHSA.

The time volume identified in the HHSA is therefore calculated on an actual basis. The applied wage concept to value that amount of time should therefore be based on actual working time as well. This would offer a greater consistency of the quantitative module and the wage concept (module on a value basis).

6.3.2 Value of labour

The defined new valuation concept is applied in the recalculation of the Finnish and German value of household production.

Quantitative module

The results of the calculation of the quantitative module are shown in Annex IV part B. The amount of time spend on household production is presented below in figure 6.10. The recalculated values are indicated in comparison to the reproduced amounts to highlight the deviations introduced by the new concept.

	Finland	Germany
<i>assumed time of absence from work</i>		19.8 %
housekeeper's net wage (based on paid working time)	€ 7.20	€ 7.10
/ (100% - 19.8%)	0.802	0.802
= housekeeper's net wage (based on actual working time)	€ 8.98	€ 8.85

source: own calculation according to Schäfer 2004

Figure 6.9: Calculation of the net wage based on the actual working time concept

Quantity of time	Finland	Germany
Reproduction (min/ day)	190.26	216.74
Recalculation (min/ day)	189.84	215.93

source: own illustration

Figure 6.10: Time spend on household production in Finland and Germany according to the reproduction and recalculation

The Finnish population spend three hours and 10 minutes per day (189.84 min/ day) on household production, on average. In Germany more time is spend on household production. On average, three hours and 36 minutes per day (215.93 min/ day) are used on unpaid work. Therewith, the German population spend about 26 min per day more on household production.

The reanalyse of the data, applying the particular activity and population filter, however results in only marginally differing figures on the quantity of time. The recalculated amounts of time expended on household production are slightly smaller than the original values. Adaptations of the quantitative module within the recalculation seem to be of minor importance.

For the Finnish recalculation only small adaptations have been made anyway. The quantitative module mainly remained the same compared to the original HHSA. Since the quantitative module has not been changed largely within the recalculation, the resulting amount of time does not change largely as well. I.e., the population covered by the new calculation concept remained the same and only minor adaptations concerning the production boundary have been made (see Annex IV part A).

Few more adaptations in comparison to Finland were necessary for the German HHSA. The age limit was reduced from twelve to ten years and the production boundary of the German HHSA was modified in terms of the recalculation. Some activities were excluded or additionally included in

the production boundary of the recalculation (see therefore Annex IV part A).

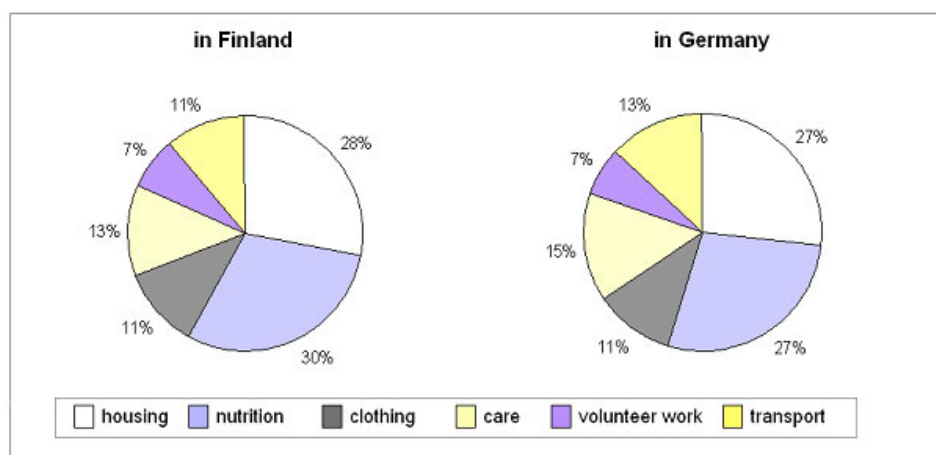
In conclusion, the German amount of time spend on household production differs somewhat more from the original values than in Finland. But it is unremarkable anyhow. The recalculated quantity of time is still higher compared to Finland. In Germany more time is used on household production according to the recalculation.

In the following, the specific structure of the quantity of time used on household production is analysed. As Finland and Germany feature differing amounts of time, its specific allocation to the various productive household activities becomes interesting. This way, potential reasons for the lower magnitude might be detected.

The structure of time use in Finland and Germany is analysed in terms of the principal household functions. The amounts of time spent on the main activity categories are highlighted to analyse the structure of time use in Finland and Germany. The results are illustrated in figure 6.11.

The figure presents the time use on the several principal household functions in Finland and Germany. The detailed calculation can be seen in Annex V. The structure of time use on the entire household production is drawn, i.e. SNA as well as Non-SNA household production is included in the quantity of time.

The results show that the structure of time use is almost equal in Finland and Germany. The time use on the specific sections differs only slightly.



source: own illustration

Figure 6.11: Structure of time use on household production

Most time on household production fall upon the sections housing and nutrition. They together make up about the half of the total time spent on household production. Time spent on volunteer work accounts for the lowest share in both countries.

Module on a value basis

The module on a value basis, in contrast, inserts some more variations. The applied wage concept in the recalculation defines an hourly wage of € 8.98 for Finland and € 8.85 for Germany. By assigning the monetary value to the quantity of time, the value of labour is obtained. The recalculated value of labour should be comparable by now, since identical methods of calculation are applied for Finland and Germany.

The procedure and the results of the recalculation of the value of labour are presented in figure 6.12.

The absolute values amount to € 46.79 billion in Finland and € 871.17 billion in Germany. To be able to compare the results of both countries, they need to be observed on the per capita level. With a value of € 10 443 Germany possess a higher figure on labour input to the household production process than Finland. The value of labour in Finland accounts for € 9 006 per capita.

Therewith a considerable change has been introduced by the recalculation. Compared to the original values an absolutely controversial picture of the relation of household production in Finland and Germany becomes apparent. This is specified in figure 6.13 below.

According to the original reports, the results indicate a higher magnitude of household production in Finland. The German population features a seemingly lower productivity in the household sector.

With the application of a consistent valuation concepts and the recalculation in a comparable way, the ratio reverses. By now, Finland offers a lower performance on household production.

This becomes comprehensible by regarding the non-monetary level (physical data) as well. According to the reproduction, the amount of time spend on household production in Germany is higher than in Finland. I.e., in Germany more time is used on household production according to the quantitative module. Actually one ought to think that the higher amount of time results in a higher value of labour as well. Though, the value of labour in the reproduction indicates a lower figure for Germany. The value of labour in Finland is higher than in Germany, although the quantity of time presents a controversial relation.

	Finland	Germany
Quantity (min per day)	189.84	215.93
x Time (days)	365	365
x Population (in 2001)	4 511 442	74 938 600
/ 60		
= Total amount of time (in hours/ year)	5 210 083 908	98 437 409 046
x Hourly wage	€ 8.98	€ 8.85
= Value of labour (in billion)	€ 46.79	€ 871.17
<i>per capita</i>	€ 9 006.25	€ 10 443.44

source: own calculation

Figure 6.12: Recalculation of the Value of Labour in Finland and Germany

	Finland	Germany
Original report	€ 10 078.15	€ 8 199.67
Recalculation	€ 9 006.25	€ 10 443.44

source: own calculation

Figure 6.13: Comparison of value of labour (per capita)

This proves that the applied wage concepts in Finland and Germany are widely inconsistent and further on, that the deviations offer a great impact on the resulting values.

6.3.3 Value of household production

The recalculation of the gross value added and the total output of household production follow the same procedure as in the reproduction above. The starting point of the calculation is the recalculated value of labour. The other entries of the calculation according to the input approach are added. Their magnitudes are indicated in the original HHSA. The resulting values of household production are presented in figure 6.14.

But the further calculation procedure features certain inaccuracies. The recalculation is fully consistent until the level of the net value added. The values of the entries SNA household production, taxes and subsidies can be adopted within the recalculation without difficulty. Their values do not change within the process of recalculation and remain the same as indicated in the HHSA.

With the implementation of the consumption parts, the calculation becomes somewhat incon-

sistent, however. I.e., those inaccuracies are caused by the addition of the entries consumption of capital and intermediate consumption to the net value added. The thereby generated values of the gross value added and the total output are not fully consistent anymore, since the consumption parts change within the process of recalculation. Actually the magnitudes of the consumption parts change due to the modification of the production boundary within the definition of the new calculation concept.

However, this is not considered within this work and no recalculation of the consumption parts is conducted. Nevertheless possibly inaccurate values are adopted.

Within this work, the recalculation of the consumption parts is forgone since the emphasis is placed on the first calculation level. This work focuses the value of labour as the most important calculation entry.

The values of consumption of capital and intermediate consumption depend on the production process. Since the production boundary is modified in the new concept, the magnitude of the production process changes and the linked consumption parts are affected consequently. The introduced

calculation entries - input approach -	Finland	Germany
	in billion €	
Value of labour	€ 46.79	€ 871.17
+ SNA household production		
Personal and domestic services produced by employing paid staff	0.07	3
Own-account production of housing services by owner-occupiers	4.27	56
Own-account house construction and renovation	0.63	*
Own-account production of goods	0.09	*
+ Taxes on production	0.20	6
- Subsidies on production	0.70	*
+ Consumption of capital	5.93	72
Gross value added	€ 57.27	€ 1 008.17
	<i>per capita</i>	
	€ 11 025.15	€ 12 085.77
+ Intermediate consumption	18.74	301
Total output	€ 76.02	€ 1 309.17
	<i>per capita</i>	
	€ 14 633.30	€ 15 694.11

* no specifications on that entry are given in the report

source: own calculation

Figure 6.14: Recalculation of the total output of Household Production

inaccuracy is to be accepted within this work insofar as the emphasis is the first calculation level. The calculation on the level of the gross value added and total output is supplemented for the sake of completeness only. Beyond, the modification of the production boundary in the recalculation is only minimal. The impact can however not be estimated at this point.

The recalculated gross value added accounts for € 57 275 million in Finland. For Germany a figure of € 1 008.17 billion is calculated. The results of Finland and Germany can be compared better on the per capita level than in their absolute values.

The figures per capita show that the reversed ratio that was indicated in the first calculation level is carried forward. By contrast to the original HHSA, the gross value added of Germany is higher than of Finland. This is as well valid for the total output. Its absolute value amounts to € 76 019 million in Finland and to € 1 309.17 billion in Germany.

In the next calculation level the value of household production will be compared to the market production. Therefore the recalculated gross value added is related to the national account's GDP. The dimension of household production in Finland and Germany is presented best intelligible this way. The results are illustrated in figure 6.15 and 6.16.

GDP € 135.5 billion (€ 26 083)		
GDP (excluding SNA household production) € 127.2 billion	SNA household production € 8.3 billion	Non-SNA household production € 48.98 billion (€ 9 428)
100 %		36 %
Extended GDP € 184.48 billion (€ 35 511)		
Market production 69 % € 127.2 billion (€ 24 486)	Household production 31 % € 57.27 billion (€ 11 025)	

figures in brackets present the value per capita
source: own illustration

Figure 6.15: Relation of household production to market production in Finland 2001 after the recalculation

GDP € 2 074 billion (€ 24 863)		
GDP (excluding SNA household production) € 1 967 billion	SNA household production € 107 billion	Non-SNA household production € 901 billion (€ 10 803)
100 %		43 %
Extended GDP € 2 975 (€ 35 666)		
Market production 66 % € 1 967 billion (€ 23 580)	Household production 34 % € 1 008 billion (€ 12 086)	

figures in brackets present the value per capita
source: own illustration

Figure 6.16: Relation of household production to market production in Germany 2001 after the recalculation

Non-SNA household production in Finland accounts for 36% of the GDP. This share would be added to the GDP, when calculating the value of the entire household production. In the original HHSA the percentage was stated at 40%. Within the recalculation its share decreases a little. The decline dues to the modification of the valuation concept.

The entire household production makes up 31% of the entire productive performance of the economy. Hence, market production constitutes two thirds and household production one third of the total production. This is alike the original HHSA.

Non-SNA household production in Germany accounts for 43%. In comparison to the value of the original HHSA, which was stated at 34%, it has increased considerably within the recalculation. By adding the part of SNA household production the entire household production with a share of 34% is gained. The figure in the original account was stated at 29%. In the recalculation its share is somewhat higher and makes up one third of the total production in Germany. Market production accounts for two thirds.

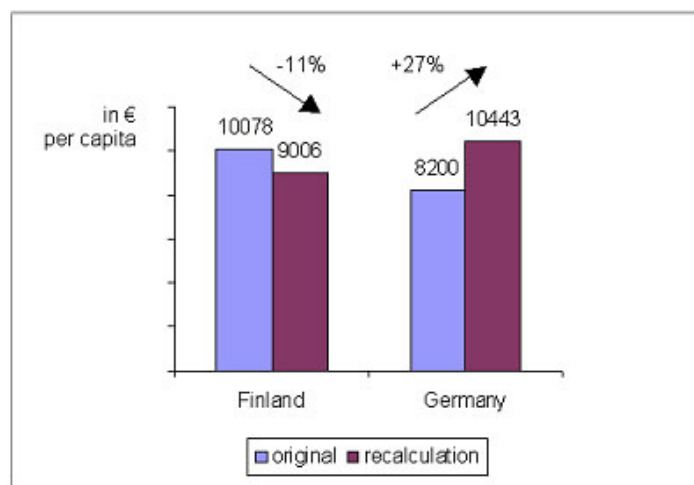
The shares of household and market production in Finland and Germany are almost on the same level. Household production makes up about one third of the total economic performance. Its percentage is somewhat higher in Germany. Finland, in contrast, features a little higher share of market production.

Altogether, the extended GDP and the shares of market and household production are almost comparable in both countries. But although the percentages are alike, the values on the per capita level draw some more distinctions.

This is to be analysed in detail in the following. The differences of the values of Finland and Germany in the several calculation levels are presented in the following figures. The value of labour, the gross value added, the total output as well as the extended GDP are compared between Finland and Germany in the figures 6.17 until 6.20. Simultaneously, the differences that are introduced with the new calculation

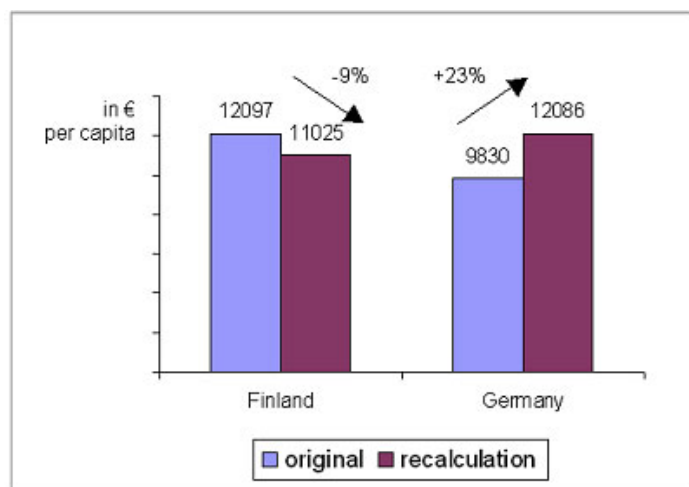
concept are drawn by comparing the figures of the original HHSA with the recalculated ones.

The difference of the magnitude of the value of labour between Finland and Germany that was suggested in the original HHSA is disproved within the recalculation. The alleged higher value of Finland in the original HHSA declines by 11% within the recalculation. The German figure by contrast increases (+27%). Consequently, the relation of the figures reverses in the recalculation. Germany denotes a great leap and its value of labour exceeds the Finnish value.



source: own illustration

Figure 6.17: Value of labour – Comparison of the original and the recalculated figures in Finland and Germany



source: own illustration

Figure 6.18: Gross value added – Comparison of the original and the recalculated figures in Finland and Germany

Through the application of the same concept the higher quantity of time spend on household production in Germany results in a higher value of labour by now as well. The unpaid work that German people carry out over the year is of a value of € 10 443.44. The Finnish value ranges about € 1 000 per capita below. The difference of the recalculated figures between the countries amounts to 14%. The recalculation leads to the result that Finnish people are less engaged in household production. The smaller volume of unpaid work, by

now, results in a somewhat lower value of labour as well.

The gross value added presents the most interesting figure as it can be related to the national account's GDP. Therewith the extended GDP that indicates the entire productive performance of an economy is produced. It is a fictitious figure however.

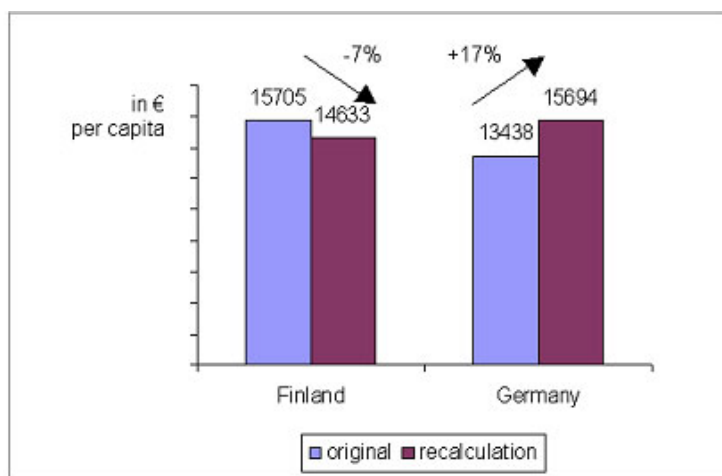
The relation of the figures between the original HHSA and the recalculation is still conversely in Finland and Germany. This aspect was already highlighted for the value of labour. It persists for the gross value added.

According to the original HHSA, Finland features a higher productive performance than Germany. Finland's gross value added was indicated at € 12 097.25 per capita in the original HHSA. The presented original value for Germany however is somewhat lower. It accounts for only € 9 830.01 per capita. But within the recalculation and the application of the new valuation concept the relation inverts. The recalculated gross value added of Finland decreases by 9%, the value of Germany, however, increases by 23%. The differences to the original values are thereby still present, but they

decrease a little compared to the previous calculation level of the value of labour. The recalculation resulted in a gross value added (per capita) of € 11 025.15 for Finland and of € 12 085.77 for Germany. Its value is therewith higher than the Finnish figure. The difference between the countries amounts to 9% on that calculation level. It is therewith somewhat lower than in the previous level (value of labour).

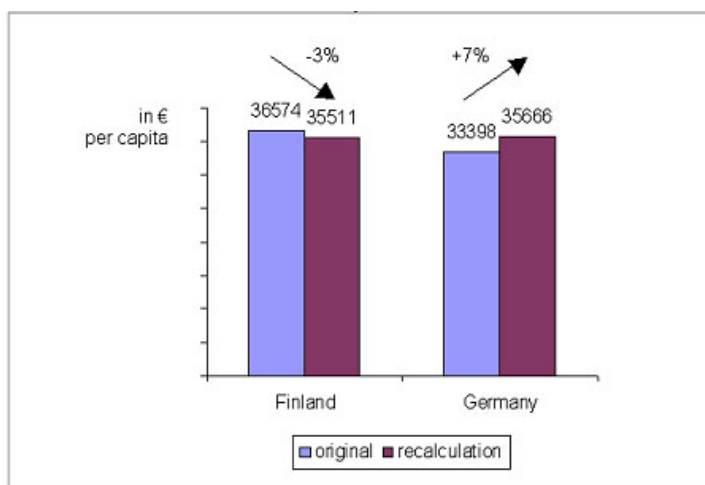
The total output of provides the same picture as the previous calculation levels. The original values indicate a higher value of household production in Finland. The recalculated values present the controversial picture of a lower production in Finland. The difference between the original and the recalculated values are thereby somewhat lower in total than in the previous levels.

The Finnish figure declines by only 7% and accounts for € 14 633.30. The German figure inc-



source: own illustration

Figure 6.19: Total output – Comparison of the original and the recalculated figures in Finland and Germany



source: own illustration

Figure 6.20: Extended GDP – Comparison of the original and the recalculated figures in Finland and Germany

reases by only 17% and amounts to € 15 694.11. The difference between Finland and Germany accounts for 7%.

When calculating the extended GDP, household production is related to market production. The extended GDP per capita for Finland indicates a value of € 35 511.27. I.e., the value of the work that Finnish people carry out over a year, in paid as well as in unpaid conditions, accounts for € 35 511 per each individual.

The German figure is comparatively only little higher and accounts for € 35 666.82. The difference between Finland and Germany in the last calculation level accounts for only 0.4%.

The values indicate an almost equally total economic performance in Finland and Germany.

7 DISCUSSION AND CONCLUSION

The results indicated in the original satellite accounts on household production in Finland and Germany are not comparable with each other. This exposed the analysis of the underlying valuation concepts within this work.

The stated values of household production in Finland and Germany can't be related to each other directly or the comparison wouldn't lead to meaningful results respectively, since the modes of calculation diverge. This work thereby focused on the first calculation level only. The value of labour was emphasised within the analysis of the calculation procedure in Finland and Germany. Further calculation factors in the HHSA, the intermediate consumption and the consumption of capital in particular, weren't examined in this work.

The value of labour was focused since it constitutes the calculation entry with the biggest share. It therefore provides a sizable and important measure of the final resulting value of household production. But it is not solely relevant for the final result due to its size. The labour part constitutes the characteristic feature of the household production process as well. This will be elucidated.

Household satellite accounts aim to cover the part of household production that is not accounted for in the national accounts. This part mostly consists of own-account services produced in households. The production process of services in turn, is composed of labour input mostly. The proportion of intermediate goods that enter the production process of services and the use of fixed assets however is only small compared to the labour input.

With the disregard of both consumption parts, the analysis of the satellite systems remains incomplete. But deviations in the mode of calculation in Finland and Germany are already discovered in the first calculation level. The inconsistency of the satellite accounts and the incomparableness of the stated results are consequently already proved. An examination of the consumption parts hence would not lead to new results in terms of the comparability.

7.1 Analysis of the calculation modules

The analysis of the value of labour was based on two main aspects, the quantitative module and the module on a value basis. They together make up the labour factor. Each module is thereby characterised by specific features. For the analysis of the modules these basic features that are indicated in the literature were adopted.

Quantitative Module

The quantitative module thereby was mainly analysed by means of the basic features of time use surveys. Since the quantity of time mainly relies on information that time use surveys provide, the quantitative module is significantly characterised by the methods of the data ascertainment in time use surveys. Hence, the quantitative module was analysed in terms of the applied methods in the time use survey at first (sample design, collection method). Secondly, the implementation of time use data in the HHSA was observed (estimation of gained data).

The exposed differences of the quantitative module between Finland and Germany mostly rely on the integration of the time use data in the HHSA. The time use surveys in contrast don't feature great differences, since they are conducted in an almost comparable way. Little deviations only occur concerning the record days and the applied coding system.

In the Finnish time use survey data are collected on two record days, whereas data are collected on three days in Germany. This might not have a great impact since means of the collected time use data are determined. Information on the average time use might only be more representative if the results are based on three instead of only two record days.

The coding system applied in the German time use survey differs from the Finnish, as activities are classified and coded in a somewhat different way. The German coding system isn't completely in line with the international standard. But this doesn't have a great impact on the results as well. Activities are just grouped in a different way and partly different labels are assigned to the activity groups. In principle, no wide difference exists since the activity coding list can be reclassified and recoded in terms of the international coding system. This has been done in this work.

The items of the applied production boundary and the covered population in contrast introduce some more diverging methods. The differing age limit, as well as the disagreement on the coverage of the institutional population implicates a loss of the comparability of the results of Finland and Germany. The production boundary of Finland and Germany diverge as well. Certain activity categories are left out or included additionally. The degree of incomparableness that these items cause though can't be estimated by means of the analysis solely. But it can be derived from the results of the recalculation.

Module on a value basis

The analysis of the module on a value basis relies on the basic features of the wage concept. In the literature the valuing method, the wage basis and the working time concept are indicated. The analysis was based on them. The applied valuing method and the working time concept are the same in the Finnish and German HHSA.

The difference of the module on a value basis mostly relies on the applied wage basis. Thereby the elucidated basic wage concepts of Finland and Germany were subject of the analysis. The Finnish main concept defines employee's gross wages for the valuation of labour time. In the German HHSA net wages are applied in contrast. The induced difference, its dimension and its impact on the comparableness of the results, can't be stated by means of the analysis.

For this purpose a recalculation was conducted. It shall highlight the impact of the differences in the mode of calculation in the Finnish and German HHSA. Thereby, comparable results were generated simultaneously.

7.2 Reproduction

To prove the reliability of the recalculation, a reproduction was carried out firstly. The original values of the Finnish and German HHSA were calculated new, to ensure the quality of the calculation procedure.

The reproduced values almost meet the original values of the satellite accounts. The difference is only marginal. It accounts for less than 1% in Finland as well as in Germany. Thereby the Finnish values ranges slightly below the original results.

The reproduced values for Germany in contrast are somewhat higher than the original ones.

The differences might due to some specifications of the satellite accounts, that weren't detected and clarified absolutely within the analysis. For instance, the exact figure of the population that was applied to project the sample to the entire population isn't stated in the satellite accounts in detail. Information on the figure used in the reproduction were gathered from statistics. It might be possible that the applied figure in the reproduction isn't identically equal to the figure of the original HHSA a hundred per cent. More importantly, the labour time was based on the household level time use, not one of the individuals, in Finland, and the total time was accordingly calculated by the number of households.

Moreover, the mode of projecting the average time use per day to an annual level is not fully retracable. Out of the HHSA of Finland and Germany it is not apparent whether the figure of 365 days per year was assumed or if the leap year was considered. Hence, the figure of 365.25 was applied to project the results.

Thirdly, the exact activity list is not indicated in detail in the original HHSA. The activity lists applied within the reproduction were reconstructed after consultation with Varjonen and Schäfer. They issued the original HHSA of Finland and Germany respectively. It's supposable that the slight differences between the reproduced and original values due to such details. Altogether, the deviations are of an acceptable dimension. The reproduction proves a reliable mode of calculation that is applied within this work. The recalculation that was conducted subsequently is confirmed by the reproduction.

It further verifies that the valuation concepts of the original HHSA have been analysed and revealed fairly exactly.

7.3 Recalculation

The recalculation ties up to the previous analysis. Hence, it focuses on the value of labour as well. A new concept for the calculation of the value of labour on a comparable basis has been defined within this work. With the recalculation the value of labour of Finland and Germany becomes comparable and the actual degree of deviation of both countries is presented. Moreover, the recalculation shows the influence of the introduced new valuation concept.

The changes of the original values compared to the recalculated values can be examined.

The new concept was created by eliminating the exposed differences in the original concepts of Finland and Germany. Thereby, recommendations in the literature were adopted as well. Mostly, no exact recommendations are provided and the decision on one of the various modes of calculation depends on the particular purpose. The introduced changes by the new valuation concept are stated below.

Quantitative Module

The implementation of the new concept didn't affect the measure of the quantitative module of Finland as much as of Germany. The recalculated quantity of time can thereby only be compared to the reproduced measures. A comparison with the original ones is not possible as no information on the quantity of time is provided by the HHSA explicitly.

The recalculated quantity of time spend on household production in Finland doesn't change that much compared to the reproduced value. This dues to the only minor adaptations that have been introduced to the original valuation concepts. The new concept doesn't diverge considerably from the Finnish concept. By contrast, for Germany some more adaptations were necessary to facilitate a comparable valuation. However, this isn't reflected in the results of the recalculation. The deviation of the German figure from the original is somewhat higher than the difference in Finland, but in total it's still negligible.

The changes introduced to the quantitative module seemingly have no great impact. Otherwise, it might be possible that the several changes cancel each other out. The restriction on the institutional population for instance may be equalised by the lower age limit and the expanded production boundary.

In the new concept the time the institutional population spend on household production isn't covered since no information are available from time use surveys. This does not affect the results seriously as the share of household production carried out by this part of the population is unlikely to be significant. (cp. Schäfer/ Schwarz 1994 in Varjonen et al. 1999, p. 15) The productivity ought to be very low as well, and might be less comparable to market production.

In conclusion, the differences in the quantity of time use on household production between Finland and Germany remain. The German population spend more time on household production than the Finnish. The difference accounts for 26 minutes per day (12%).

Although the amounts of time spend on household production diverge in Finland and Germany, the structure of time use is almost identical. The allocation of time in Finland and Germany doesn't diverge by and large. The shares of time used on the several principal household functions are alike in Finland and Germany all over. The difference in the quantity of time use, hence, doesn't due to differences in the allocation of time. No principal category is emphasised or neglected in Finland or Germany.

Module on a value basis

The second calculation step, the monetary valuation however, induced a major difference in both countries. With the application of the new wage concept crucial differences were implemented. The valuation of the quantity of time with the new concept leads to diverging figures of the value of labour. The values differ between Finland and Germany, as well as between the original HHSA and the recalculation.

The basic changes that were introduced by the new wage concept concern the wage basis and the working time concept. In the new concept net wages and the actual working time concept were defined. Information on the net wages in Finland and Germany are stated in the particular HHSA. The indicated hourly net wages are adopted in the recalculation. Thereby it must be considered that net wages are casually problematical. They need to be calculated firstly, as wage statistics are generally based on gross wages. The calculation however induces some insecurities. A percentage of the income tax burden must be deducted from the gross wage to produce net wages. Due to the progressivity of the income tax, only average figures can be used in the calculation of net wages. Therewith, certain inaccuracies are introduced. (cp.: Eurostat 2003, p. 27)

The actual working time concept induces some insecurities as hourly wages based on actual working time are solely indicated in the German HHSA. No information for Finland are available though.

Therefore, the percentage of time of absence from work that was assumed in Germany was adopted for Finland as well. The obtained wage on the actual working time basis hence might not be appropriate a hundred per cent for Finland. The share assumed in Germany is just taken over and this particular share might not suit the conditions in Finland perfectly. Finland might feature an other share of time of absence from work. But as the percentage is an estimation anyway and the calculated wage is a fictitious measure only, these small inaccuracies are not as considerable. Furthermore, it is unlikely that the percentages of time absence from work are differing as much in Finland and Germany.

7.4 Value of Household Production

The other calculation factors are subsequently added to the recalculated value of labour. Therewith the gross value added and the total output of household production are obtained. In the consideration of the gained results it need to be regarded that the added consumption parts are not recalculated within this work. As stated previously, the introduced new calculation concept might have an impact on the consumption of intermediate goods and of capital, that is not allowed for in the recalculation of the gross value added or the total output respectively.

The gained results of the recalculation indicate a controversial picture of the relation of household production between Finland and Germany. In the original satellite accounts the magnitude of household production in Finland is indicated much higher than in Germany in the several calculation levels (value of labour, gross value added, total output). By contrast, within the recalculation and the application of the new, consistent concept the relation changes and a higher value of household production in Germany results. This reversal dues to the differing valuation methods that were applied in the original satellite accounts. Within the recalculation the deviations in the modes of calculation in Finland and Germany are eliminated and the generation of actual comparable results is facilitated. With the recalculation the actual relation of the Finnish and German values of household production is drawn.

The German value of household production exceeds the Finnish values by approximately 10% in the calculation levels of the value of labour, the

gross value added and the total output. Consequently, the recalculated figures per capita indicate a higher value of household production in Germany and a lower value for Finland. On average, more unpaid work is carried out in German households. The Finnish population is not as engaged in household production.

However, in the last calculation level, the generation of the extended GDP, the difference in the values of Finland and Germany decreases to 0.4%. The productive capacity in Finland and Germany seems to be alike, at least according to the calculation level of the extended GDP. The decline of the difference from 10% to only 0.4% can be explained with the aspect of the combination of market and household production. Within the calculation of the extended GDP, the gross value added (Non-SNA household production) and the national account's GDP are combined to present the entire productive capacity of a country.

Finland features a higher value of market production (GDP) than Germany. Its GDP per capita exceeds the German figure. The Finnish value of household production (gross value added), by contrast, is somewhat lower compared to Germany. Hence, the relation of household and market production in Finland and Germany is conversely. In consequence of the combination of both, the differing shares are balanced and the resulting values of the extended GDP of Finland and Germany are almost analogue. Accordingly, the results of this work would indicate an equally economic performance in Finland and Germany. The particular shares of household production and market production in both countries, however, diverge from each other.

The compensation of the difference between Finland and Germany in the last calculation level might be presumed as an indication of the interchangeability of household and market production amongst each other. Following this assumption, a higher market production would entail a lower proportion of household production and vice versa. The value of the entire production thereby remains the same; just the places of production (on the market or in households) alter.

The presentation of the productive capacity is however specific. In general the productive performance of a country is indicated in the figures of the national accounts. The GDP as main-indicator,

however, only reflects market production.⁷ Household production is neglected, mostly.

Since more work is carried out on the market than in households in Finland, the GDP indicates a high productive performance. By comparison, the GDP of Germany is lower since more work is carried out in households than on the market. Production in households is not accounted for in the national accounts⁸ and is therefore not reflected in the GDP. According to the national accounts, Germany consequently seems to possess a lower productive capacity. But actually it features a similar productive capacity than Finland, what is drawn in the figure of the extended GDP. Germany's higher share of household production compensates the lower share of market production and the entire productive capacity is alike the Finnish one.

7 Market production is reflected primarily. As mentioned above, specific parts of household production – the SNA household production, are included as well in the national accounts.

8 (Besides the SNA household production)

8 SUMMARY

Within this work the value of household production in Finland and Germany is analysed. The figures on household production of Finland and Germany provided by the particular Household Satellite Account Systems indicate a higher value of household production for Finland. The total output of household production amounts to € 15 705 per capita. The German value ranges below the Finnish figure and amounts to only € 13 438 per capita. Though, the analysis of the particular satellite account systems revealed differences in the underlying valuation concepts in both countries. The indicated values in the Household Satellite Accounts of Finland and Germany are consequently incommensurable.

Within a recalculation of the values of household production, comparable results of both countries are generated. For this purpose a new and consistent valuation concept is defined. The defined concept thereby facilitates the presentation of household production in relation to market production. The resulting values of the recalculation present a conversely ratio of the Finnish and German value on household production compared to the original results. After the alignment of the calculation methods in the recalculation, Germany features the higher value of household production. Its value increased within the valuation process and ranges above the Finnish value. The recalculated total output in Germany accounts for € 15 694 per capita. The Finnish value by contrast decreased and amounts to only € 14 633 per capita. Hence, the modifications, introduced to the valuation concept in terms of the calculation of comparable results, caused changes in the values of household production in Finland and Germany.

When household production is related to market production the values of Finland and Germany approximates. The so-called extended GDP, which comprises market and household production, is almost equal in Finland and Germany. This signifies a resembling value of productive capacity.

However, the shares of household and market production in the entire production diverge. Germany features a higher share of household production and a lower share of market production. Finland, by contrast, offers the complementary ratio.

It posses a higher value of market production and a smaller share of household production.

This work proves the great impact of calculation methods on the resulting values of household production and verifies the benefits of an international consistent valuation.

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ANNEX

- Annex I** Production boundary in the Finnish and German Household Satellite Account System
- Annex II** Comparison of the Finnish and German production boundary
- Annex III** Average Time Use on Household Production according to the original concepts of the HHSA of Finland and Germany
- Annex IV** Average Time Use on Household Production according to the new concept of the recalculation in Finland and Germany
- Annex V** Time Use in Finland and Germany according to the principal household functions

ANNEX I

**Production boundary in the Finnish and German
Household Satellite Account System**

A) German household activity list

The following list presents the delimitation of unpaid work in the German time use survey. The listed activities are related to productive household performances and are taken into account in the quantitative determination of household production, according to Dieter Schäfer¹ of the Federal Statistical Office.

The list indicates the activity categories of the time use survey, used in the HHSA in their English labels and with their respective German codes.

1-digit	2-digit	3-digit	activities
zh 3	HOUSEKEEPING AND FAMILY CARE		
		zh 300	unspecified activities
	zh 31	FOOD PREPARATION	
		zh 310	unspecified food management
		zh 311	food preparation
		zh 312	baking
		zh 313	dish washing
		zh 314	preserving
		zh 319	other specified food management
	zh 32	HOUSEHOLD UPKEEP	
		zh 320	unspecified household upkeep
		zh 321	cleaning dwelling
		zh 322	cleaning yard
		zh 323	heating
		zh 324	various arrangements
		zh 329	other specified household upkeep
	zh 33	MAKING AND CARE FOR TEXTILES	
		zh 330	unspecified making and care for textiles
		zh 331	laundry
		zh 332	ironing and mangling
		zh 333	handicraft and producing textiles
		zh 334	repairing
		zh 339	other specified making and care for textiles
	zh 34	GARDENING, PLANT AND PET CARE	
		zh 340	unspecified gardening and pet care

¹ Dieter Schäfer compiled the current German Household Satellite Account.

	zh 341	gardening outside
	zh 342	gardening inside
	zh 343	gardening without location
	zh 344	tending domestic animals
	zh 345	caring for pets
	zh 346	walking the dog
	zh 347	caring for animals unknown, whether exactly for pets or farm animals
	zh 349	other specified gardening and pet care
TRAVEL RELATED TO HOUSEWORK AND GARDENING (31-34)		
	zh 931	travel related to food preparation, household upkeep, making and care for textiles, gardening and pet care
	zh 939	other/ unspecified travel related to housekeeping and family care
zh 35	CONSTRUCTION AND HANDICRAFT ACTIVITIES	
	zh 350	unspecified construction and repairs
	zh 351	house construction and renovation
	zh 352	repairs of dwelling
	zh 353	making and repairing of furniture, durables
	zh 354	making, repairing and maintaining equipment
	zh 355	vehicle maintenance
	zh 359	other specified construction and repairs
TRAVEL RELATED TO CONSTRUCTION		
	zh 932	travel related to construction and handicraft activities
zh 36	SHOPPING AND SERVICES	
	zh 360	unspecified shopping and services
	zh 361	shopping
	zh 362	commercial and administrative services
	zh 369	other specified shopping and services
zh 37	HOUSEHOLD MANAGEMENT AND ORGANISATION	
	zh 370	unspecified household management
	zh 371	household management
	zh 372	tele-shopping
	zh 373	shopping by internet, online banking
	zh 379	other specified household management
TRAVEL RELATED TO SHOPPING AND SERVICES		
	zh 933	travel related to shopping and services, incl. household management
zh 38	CHILDCARE	
	zh 380	unspecified childcare
	zh 381	physical care and supervision
	zh 382	teaching the child
	zh 383	playing and doing sport with the child
	zh 384	talking with the child
	zh 385	cuddle and smooch with the child

	zh 386	accompanying the child and keep appointments related to children
	zh 387	care for ill and high-maintenance children
	zh 388	reading to children
	zh 389	other specified childcare
	TRAVEL RELATED TO CHILDCARE	
	zh 934	travel related to childcare
zh 39	SUPPORT, HELP AND CARE TO AN ADULT FAMILY MEMBER	
	zh 390	unspecified activities
	zh 391	help to an adult family member
	zh 392	care and support for ill and elderly adult family members
	TRAVEL RELATED TO SUPPORT OF ADULT FAMILY MEMBERS	
	zh 935	travel related to help of adult family members
	zh 936	travel related to care and support of adult family members
zh 4	VOLUNTEERING AND INFORMAL HELP	
	zh 400	unspecified activities
zh 41	ORGANISATIONAL VOLUNTEERING	
	zh 410	unspecified organisational work
	zh 411	work for an organisation
	zh 412	volunteer work through an organisation
	zh 419	other specified organisational work
	TRAVEL RELATED TO ORGANISATIONAL VOLUNTEERING	
	zh 941	travel related to organisational work
	zh 949	other/ unspecified travel for volunteering or informal help
zh 42	INFORMAL HELP	
	zh 420	unspecified informal help
	zh 421	childcare as help
	zh 422	gardening
	zh 423	household upkeep
	zh 424	shopping and services
	zh 425	look after homes of fiends, relatives, neighbours
	zh 426	agency and insurance affairs
	zh 427	mental support, talking, advising
	zh 428	care of ill and elderly people
	zh 429	construction and repair
	zh 430	vehicle repair and maintenance
	zh 431	animal care
	zh 432	preparation of food
	zh 433	transportation and moves
	zh 434	financial support
	zh 439	other specified informal help
	TRAVEL RELATED TO INFORMAL HELP	
	zh 942	travel related to informal help to other households

source: Schäfer; Time Use Survey of Germany 2001/ 02

B) Finnish household activity list

The following list presents the delimitation of unpaid work in the Finnish time use survey. The listed activities were taken into account in the valuation process of household production, according to Johanna Varjonen² of the National Consumer Research Centre. The list indicates the activity categories of the time use survey, that were included in the production boundary of the Finnish HHS in their English labels and with their respective Finnish codes.

1-digit	2-digit	3-digit	activities
t 3	HOUSEHOLD AND FAMILY CARE		
		t 300	unspecified household work
	t 31	FOOD PREPARATION	
		t 310	unspecified food management
		t 311	food preparation
		t 312	preparation of snacks and coffee
		t 313	baking
		t 314	dish washing
		t 315	preserving
		t 319	other specified food management
	t 32	HOUSEHOLD UPKEEP	
		t 320	unspecified household upkeep
		t 321	cleaning dwelling
		t 322	cleaning yard
		t 323	heating and water
		t 324	various arrangements
		t 329	other specified household upkeep
	t 33	MAKING AND CARE FOR TEXTILES	
		t 330	unspecified making and care for textiles
		t 331	laundry
		t 332	ironing
		t 333	producing textiles
		t 334	handicraft
		t 339	other specified making and care for textiles
	t 34	GARDENING AND PET CARE	
		t 340	unspecified gardening and pet care
		t 341	gardening
		t 342	caring for pets
		t 343	walking the dog
		t 349	other specified gardening and pet care
	t 35	CONSTRUCTION AND REPAIRS	

² Johanna Varjonen compiled the latest Finnish Household Satellite Account.

	t 350	unspecified construction and repairs
	t 351	house construction and renovation
	t 352	repairs of dwelling
	t 353	making, repairing and maintaining equipment
	t 354	vehicle maintenance
	t 359	other specified construction and repairs
t 36	SHOPPING AND SERVICES	
	t 361	groceries and other daily goods (perishable)
	t 362	purchasing other goods and services
	t 363	commercial and administrative services
t 37	HOUSEHOLD MANAGEMENT	
	t 371	household management
t 38	CHILDCARE	
	t 380	unspecified childcare
	t 381	physical care and supervision
	t 382	teaching the child
	t 383	reading and playing with the child
	t 384	accompanying the child
	t 385	being outside with the child
	t 386	talking with the child
	t 389	other specified childcare
t 39	HELP TO AN ADULT FAMILY MEMBER	
	t 391	help to an adult family member
t 4	VOLUNTEERING AND INFORMAL HELP	
	t 400	unspecified volunteer work and meetings
t 41	ORGANISATIONAL VOLUNTEERING	
	t 410	unspecified organisational work
	t 411	work for an organisation
	t 412	volunteer work through an organisation
	t 419	other specified organisational work
t 42	INFORMAL HELP	
	t 420	unspecified informal help
	t 421	food management as help
	t 422	household upkeep as help
	t 423	clothing as help
	t 424	gardening and pet care as help
	t 425	construction and repair as help
	t 426	shopping and services as help
	t 427	childcare as help
	t 428	help to a neighbour
	t 429	other specified informal help
t 6	SPORTS AND OUTDOOR ACTIVITIES	
	t 62	PRODUCTIVE EXERCISE
	t 620	unspecified productive exercise
	t 621	hunting and fishing

	t 622	picking berries, mushrooms and herbs
	t 629	other specified productive exercise
t 9	TRAVEL AND UNSPECIFIED TIME USE	
	t 931	travel related to household care
	t 936	travel related to shopping and services
	t 938	travel related to childcare
	t 939	transporting an adult family member
	t 941	travel related to organisational work
	t 942	travel related to informal help

source: Varjonen; Statistics Finland – Time Use Survey: Finnish Satellite Coding

ANNEX II

Comparison of the Finnish and German Production boundary

HETUS		Finland	Germany
Code	Label/ activity category		
300	Unspecified household and family care	✓	✓
310	Unspecified food management	✓	✓
311	Food preparation	✓	✓
312	Baking	✓	✓
313	Dish washing	✓	✓
314	Preserving	✓	✓
319	Other specified food management	✓	✓
320	Unspecified household upkeep	✓	✓
321	Cleaning dwelling	✓	✓
322	Cleaning yard	✓	✓
323	Heating and water	✓	✓
324	Various arrangements	✓	✓
329	Other specified household upkeep	✓	✓
330	Unspecified making and care for textiles	✓	✓
331	Laundry	✓	✓
332	Ironing	✓	✓
333	Handicraft and producing textiles	✓	✓
339	Other specified making and care for textiles	✓	✓
340	Unspecified gardening and pet care	✓	✓
341	Gardening	✓	✓
342	Tending domestic animals	✗	✓
343	Caring for pets	✓	✓
344	Walking the dog	✓	✓
349	Other specified gardening and pet care	✓	✓
350	Unspecified construction and repairs	✓	✓
351	House construction and renovation	✓	✓
352	Repairs of dwelling	✓	✓
353	Making, repairing and maintaining equipment	✓	✓
354	Vehicle maintenance	✓	✓
359	Other specified construction and repairs	✓	✓
360	Unspecified shopping and services	✗	✓
361	Shopping	✓	✓
362	Commercial and administrative services	✓	✓
369	Other specified shopping and services	✗	✓
371	Household management	✓	✓
380	Unspecified childcare	✓	✓
381	Physical care and supervision	✓	✓
382	Teaching the child	✓	✓

383	Reading, playing and talking with child	✓	✓
384	Accompanying child	✓	✓
389	Other specified childcare	✓	✓
391	Help to an adult family member	✓	✓
400	Unspecified volunteer work and meetings	✓	✓
410	Unspecified organisational work	✓	✓
411	Work for an organisation	✓	✓
412	Volunteer work through an organisation	✓	✓
419	Other specified organisational work	✓	✓
420	Unspecified informal help	✓	✓
421	Food management as help	✓	✓
422	Household upkeep as help	✓	✓
423	Gardening and pet care as help	✓	✓
424	Construction and repairs as help	✓	✓
425	Shopping and services as help	✓	✓
426	Help in employment and farming	✗	✗
427	Childcare as help	✓	✓
428	Help to an adult of another household	✓	✓
429	Other specified informal help	✓	✓
620	Unspecified productive exercise	✓	✗
621	Hunting and fishing	✓	✗
622	Picking berries, mushroom and herbs	✓	✗
629	Other specified productive exercise	✓	✗
931	Travel related to household care	✓	✓
936	Travel related to shopping and services	✓	✓
938	Transporting a child	✓	✓
939	Transporting an adult family member	✓	✓
941	Travel related to organisational work	✓	✓
942	Travel related to informal help	✓	✓

legend: ✓ included ✗ excluded

source: own illustration; according to Schäfer 2004 "Unbezahlte Arbeit und Bruttoinlandsprodukt 1992 und 2001", Varjonen et al. 2006 "Household Production and Consumption in Finland 2001"

ANNEX III

Average Time Use on Household Production
according to the original concepts of the HHS of Finland and Germany

A) Reproduction of the Finnish time use

Code	Label	Mean (min per day)
t 300	unspecified household work	1.33
t 310	unspecified food management	0.05
t 311	food preparation	19.08
t 312	preparation of snacks and coffee	11.87
t 313	baking	2.95
t 314	dish washing	9.19
t 315	preserving	1.29
t 319	other specified food management	0.06
t 320	unspecified household upkeep	0.29
t 321	cleaning dwelling	16.44
t 322	cleaning yard	4.21
t 323	heating and water	5.99
t 324	various arrangements	11.66
t 329	other specified household upkeep	0.19
t 330	unspecified making and care for textiles	0.07
t 331	laundry	7.11
t 332	ironing	2.40
t 333	producing textiles	1.38
t 334	handicraft	3.65
t 339	other specified making and care for textiles	0.37
t 340	unspecified gardening and pet care	0.06
t 341	gardening	6.18
t 342	caring for pets	2.40
t 343	walking the dog	0.46
t 349	other specified gardening and pet care	0.23
t 350	unspecified construction and repairs	0.10
t 351	house construction and renovation	2.32
t 352	repairs of dwelling	2.31
t 353	making, repairing and maintaining equipment	2.31
t 354	vehicle maintenance	3.40
t 359	other specified construction and repairs	0.10
t 361	groceries and other daily goods (perishable)	10.21
t 362	purchasing other goods and services	11.44
t 363	commercial and administrative services	1.84

t 371	household management	2.41
t 380	unspecified childcare	0.10
t 381	physical care and supervision	8.76
t 382	teaching the child	0.33
t 383	reading and playing with the child	3.56
t 384	accompanying the child	0.96
t 385	being outside with the child	1.64
t 386	talking with the child	1.19
t 389	other specified childcare	0.11
t 391	help to an adult family member	0.76
t 400	unspecified volunteer work and meetings	0.00
t 410	unspecified organisational work	0.10
t 411	work for an organisation	2.41
t 412	volunteer work through an organisation	1.52
t 419	other specified organisational work	0.07
t 420	unspecified informal help	0.41
t 421	food management as help	0.65
t 422	household upkeep as help	1.97
t 423	clothing as help	0.23
t 424	gardening and pet care as help	0.74
t 425	construction and repair as help	1.54
t 426	shopping and services as help	0.29
t 427	childcare as help	2.06
t 428	help to a neighbour	0.79
t 429	other specified informal help	1.34
t 620	unspecified productive exercise	0.04
t 621	hunting and fishing	3.41
t 622	picking berries, mushrooms and herbs	1.11
t 629	other specified productive exercise	/ * ¹
t 931	travel related to household care	1.54
t 936	travel related to shopping and services	11.90
t 938	travel related to childcare	1.77
t 939	transporting an adult family member	0.79
t 941	travel related to organisational work	0.68
t 942	travel related to informal help	2.20
Sum		200.29
	Non-SNA household production * ²	190.26

*¹ This activity category is missing in the time use survey and no value could be calculated within the reproduction consequently.

*² The Non-SNA household production comprises those activities that aren't already covered through the SNA. The marked activities in the table are SNA activities

(already covered). Their values are consequently deducted from the total time volume on household production.

The activity category *Gardening* (t341) is divided by half. It is only partly subtracted from the total time volume. The activity category is partly covered in the national accounts. One half is presumed decorative gardening (NON-SNA) and the second half as the growing of vegetables, fruits, berries etc. (SNA). The SNA part needs to be deducted to obtain the Non-SNA household production.

B) Reproduction of the German time use

Code	Label	Mean (min per day)
zh 300	unspecified activities	1.67
zh 310	unspecified food management	0.01
zh 311	food preparation	27.55
zh 312	baking	1.83
zh 313	dish washing	14.11
zh 314	preserving	0.75
zh 319	other specified food management	0.03
zh 320	unspecified household upkeep	0.47
zh 321	cleaning dwelling	23.84
zh 322	cleaning yard	3.12
zh 323	heating	1.04
zh 324	various arrangements	7.99
zh 329	other specified household upkeep	0.03
zh 330	unspecified making and care for textiles	0.05
zh 331	laundry	6.40
zh 332	ironing and mangling	5.05
zh 333	handicraft and producing textiles	2.59
zh 334	repairing	0.51
zh 339	other specified making and care for textiles	0.33
zh 340	unspecified gardening and pet care	4.65
zh 341	gardening outside	7.74
zh 342	gardening inside	0.99
zh 343	gardening without location	0.39
zh 344	tending domestic animals	0.86
zh 345	caring for pets	3.61
zh 346	walking the dog	3.63
zh 347	caring for animals unknown, whether exactly for pets or farm animals	0.08
zh 349	other specified gardening and pet care	0.13

zh 931	travel related to food preparation, household upkeep, making and care for textiles and gardening and pet care	3.13
zh 939	other/ unspecified travel related to housekeeping and family care	0.13
zh 350	unspecified construction and repairs	0.21
zh 351	house construction and renovation	2.43
zh 352	repairs of dwelling	2.25
zh 353	making and repairing of furniture, durables	1.07
zh 354	making, repairing and maintaining equipment	1.05
zh 355	vehicle maintenance	2.70
zh 359	other specified construction and repairs	0.16
zh 932	travel related to construction and handicraft activities	0.19
zh 360	unspecified shopping and services	0.03
zh 361	shopping	22.90
zh 362	commercial and administrative services	2.13
zh 369	other specified shopping and services	0.15
zh 370	unspecified household management	0.07
zh 371	household management	5.92
zh 372	tele-shopping	0.03
zh 373	shopping by internet, online banking	0.11
zh 379	other specified household management	0.01
zh 933	travel related to shopping and services, incl. household management	15.90
zh 380	unspecified childcare	0.06
zh 381	physical care and supervision	7.00
zh 382	teaching the child	1.01
zh 383	playing and doing sport with the child	3.82
zh 384	talking with the child	0.79
zh 385	cuddle and smooch with the child	0.22
zh 386	accompanying the child and keep appointments related to children	1.11
zh 387	care for ill and high-maintenance children	0.33
zh 388	reading to children	0.56
zh 389	other specified childcare	0.08
zh 934	travel related to childcare	2.45
zh 390	unspecified activities	0.01
zh 391	help to an adult family member	0.49
zh 392	care and support for ill and elderly adult family members	0.39
zh 935	travel related to help of adult family members	0.95
zh 936	travel related to care and support of adult family members	0.12
zh 400	unspecified activities	0.00
zh 410	unspecified organisational work	0.06
zh 411	work for an organisation	4.49
zh 412	volunteer work through an organisation	2.59
zh 419	other specified organisational work	0.01
zh 941	travel related to organisational work	1.14

zh 949	other/ unspecified travel for volunteering or informal help	0.11
zh 420	unspecified informal help	0.29
zh 421	childcare as help	1.47
zh 422	gardening	0.58
zh 423	household upkeep	0.58
zh 424	shopping and services	0.33
zh 425	look after homes of fiends, relatives, neighbours	0.13
zh 426	agency and insurance affairs	0.03
zh 427	mental support, talking, advising	0.03
zh 428	care of ill and elderly people	0.28
zh 429	construction and repair	1.64
zh 430	vehicle repair and maintenance	0.06
zh 431	animal care	0.36
zh 432	preparation of food	0.51
zh 433	transportation and moves	0.40
zh 434	financial support	0.00
zh 439	other specified informal help	0.60
zh 942	travel related to informal help to other households	1.66
Sum		216.74

Within the reproduction of the German value of household production all positions indicated in the activity list are taken into account.

The activity categories that are already covered by the national accounts couldn't be identified in detail within this work. Hence, no amount of time is conducted from the total volume to derive the Non-SNA household production. The SNA activities that are partly included in some of the activity categories are consequently taken into account as well.

This isn't conform with the calculation procedure of the original HHSA and might lead to certain inaccuracies, since the specific positions are accounted twice. According to Schäfer this however don't have a crucial impact on the results.

He states that the SNA activities included in the activity list, feature a only small share of the total amount of time spent on household production that is indicated above.

The SNA activities that are added to the value of labour in the valuation process (the positions: Personal and domestic services produced by employing paid staff and Own-account production of housing services by owner-occupiers) have no counterparts in the time use survey, according to Schäfer further on.

Hence, the reproduced quantity of time is not fully consistent, but approximates the original value sufficiently, anyhow.

ANNEX IV

Average Time Use on Household Production
according to the new concept of the recalculation in Finland and Germany

A) Alignment of activity lists


Production boundaries			
Finnish HHSA (original)		Recalculation (HETUS codes)	German HHSA (original)
t300	unspecified household work	300	unspecified activities zh300
t310	unspecified food management	310	unspecified food management zh310
t311	food preparation	311	food preparation zh311
t312	preparation of snacks and coffee		
t313	baking	312	baking zh312
t314	dish washing	313	dish washing zh313
t315	preserving	314	preserving zh314
t319	other specified food management	319	other specified food management zh319
t320	unspecified household upkeep	320	unspecified household upkeep zh320
t321	cleaning dwelling	321	cleaning dwelling zh321
t322	cleaning yard	322	cleaning yard zh322
t323	heating and water	323	heating zh323
t324	various arrangements	324	various arrangements zh324
			gardening inside zh342
t329	other specified household upkeep	329	other specified household upkeep zh329
t330	unspecified making and care for textiles	330	unspecified making and care for textiles zh330

t331	laundry	331	laundry	zh331
t332	ironing	332	ironing and mangling	zh332
t333	producing textiles	333	handicraft and producing textiles	zh333
t334	handicraft			
t339	other specified making and care for textiles	339	other specified making and care for textiles	zh339
			repairing	zh334
t340	unspecified gardening and pet care	340	unspecified gardening and pet care	zh340
			gardening without location	zh343
			pet care, unknown whether pets or farm animals	zh347
t341	gardening	341	gardening outside	zh341
[-]		342	tending domestic animals	zh344
t342	caring for pets	343	caring for pets	zh345
t343	walking the dog	344	walking the dog	zh346
t349	other specified gardening and pet care	349	other specified gardening and pet care	zh349
t350	unspecified construction and repairs	350	unspecified construction and repairs	zh350
t351	house construction and renovation	351	house construction and renovation	zh351
t352	repairs of dwelling	352	repairs of dwelling	zh352
t353	making, repairing and maintaining equipment	353	making and repairing of furniture, durables	zh353
			making, repairing and maintaining equipment	zh354
t354	vehicle maintenance	354	vehicle maintenance	zh355
t359	other specified construction and repairs	359	other specified construction and repairs	zh359
t360	unspecified shopping and services	360	unspecified shopping and services	zh360
t361	groceries and other daily goods (perishable)	361	shopping	zh361
t362	other goods and services			
t363	commercial and administrative services	362	commercial and administrative services	zh362
t369	other specified shopping and services	369	other specified shopping and services	zh369
t371	household management and organisation	371	household management	zh371
			tele-shopping	zh372
			shopping by internet, online banking	zh373
			unspecified household management	zh370

			other specified household management	zh379
t380	unspecified childcare	380	unspecified childcare	zh380
t381	physical care and supervision	381	physical care and supervision cuddle and smooch with the child care for ill and high-maintenance children	zh381 zh385 zh387
t382	teaching the child	382	teaching the child	zh382
t383	reading and playing with child	383	playing and doing sport with the child	zh383
t386	talking with the child		talking with the child reading to children	zh384 zh388
t384	accompanying child	384	accompanying the child	zh386
t385	being outside with the child	[-]		[-]
t389	other specified childcare	389	other specified childcare	zh389
t391	help to an adult family member	391	help to an adult family member unspecified activities care for ill and elderly adult family members unpaid work associated to the occupation of others	zh391 zh390 zh392 zh142
t400	unspecified volunteer work and meetings	400	unspecified activities	zh400
t410	unspecified organisational work	410	unspecified organisational work	zh410
t411	work for an organisation	411	work for an organisation	zh411
t412	volunteer work through an organisation	412	volunteer work through an organisation	zh412
t419	other specified organisational work	419	other specified organisational work	zh419
t420	unspecified informal help	420	unspecified informal help	zh420
t421	food management as help	421	preparation of food	zh432
t422	household upkeep as help	422	household upkeep	zh423
t423	clothing as help		look after homes of fiends, relatives, neighbours transportation and moves	zh425 zh433
t424	gardening and pet care as help	423	gardening animal care	zh422 zh431
t425	construction and repairs as help	424	construction and repair vehicle repair and maintenance	zh429 zh430

t426	shopping and services as help	425	shopping and services agency and insurance affairs	zh424 zh426
t427	childcare as help	427	childcare as help	zh421
t428	help to a neighbour	428	care of ill and elderly people mental support, talking, advising financial support	zh428 zh427 zh434
t429	other specified informal help	429	other specified informal help	zh439
t430	unspecified productive exercises	620	unspecified productive exercises	zh640
t621	hunting, fishing	621	hunting, fishing	zh641
t622	picking berries and mushrooms	622	picking berries and mushrooms	zh642
t629	other specified productive exercises	629	other specified productive exercises	zh649
t931	travel related to household care	931	travel related to household care travel related to construction other/ unspecified travel related to household care	zh931 zh932 zh939
t936	travel related to shopping and services	936	travel related to shopping, household management	zh933
t938	travel related to childcare	938	travel related to childcare	zh934
t939	transporting an adult family member	939	travel related to help of adult family members travel related to care of adult family members	zh935 zh936
t941	travel related to organisational work	941	travel related to organisational work	zh941
[-]		[-]	other/ unspecified travel for volunteering	zh949
t942	travel related to informal help	942	travel related to informal help to other households	zh942

 not included in the production boundary of the recalculation

 additionally included in the production boundary of the recalculation (additionally to the activity list of the original HHSA)

B) Recalculation of time use data according to the new concept

Code	Label	Finland	Germany
		(min per day)	
300	Unspecified household and family care	1.33	1.82
310	Unspecified food management	0.05	0.02
311	Food preparation	19.08 11.87	28.06
312	Baking	2.95	1.74
313	Dish washing	9.19	14.13
314	Preserving	1.29	0.70
319	Other specified food management	0.06	0.01
320	Unspecified household upkeep	0.29	0.45
321	Cleaning dwelling	16.44	23.74
322	Cleaning yard	4.21	3.37
323	Heating and water	5.99	0.96
324	Various arrangements	11.66	7.85 1.03
329	Other specified household upkeep	0.19	0.05
330	Unspecified making and care for textiles	0.07	0.08
331	Laundry	7.11	6.43
332	Ironing	2.40	4.96
333	Handicraft and producing textiles	1.38 3.65	2.92
339	Other specified making and care for textiles	0.37	0.31 0.47
340	Unspecified gardening and pet care	0.06	4.66 0.49 0.13
341	Gardening	6.18	7.83
343	Caring for pets	2.40	3.26
344	Walking the dog	0.46	3.08
349	Other specified gardening and pet care	0.23	0.09
350	Unspecified construction and repairs	0.10	0.17
351	House construction and renovation	2.32	2.04
352	Repairs of dwelling	2.31	1.92
353	Making, repairing and maintaining equipment	2.31	1.21 1.16
354	Vehicle maintenance	3.40	2.55
359	Other specified construction and repairs	0.10	0.15
360	Unspecified shopping and services	1.11	0.03
361	Shopping	10.21 11.44	22.61
362	Commercial and administrative services	1.84	2.09
369	Other specified shopping and services	0.11	0.13
371	Household management	2.41	0.03

			5.97
			0.03
			0.09
			0.03
380	Unspecified childcare	0.10	0.08
381	Physical care and supervision	8.76	6.73
			0.25
			0.20
382	Teaching the child	0.33	1.15
383	Reading, playing and talking with child	3.56	3.84
		1.19	0.74
			0.54
384	Accompanying child	0.96	1.15
389	Other specified childcare	0.11	0.09
391	Help to an adult family member	0.76	0.02
			0.46
			0.37
			0.45
400	Unspecified volunteer work and meetings	0.00	0.01
410	Unspecified organisational work	0.10	0.06
411	Work for an organisation	2.41	4.76
412	Volunteer work through an organisation	1.52	2.52
419	Other specified organisational work	0.07	0.05
420	Unspecified informal help	0.41	0.24
421	Food management as help	0.65	0.61
422	Household upkeep as help	1.97	0.62
		0.23	0.15
			0.31
423	Gardening and pet care as help	0.74	0.56
			0.47
424	Construction and repairs as help	1.54	1.64
			0.09
425	Shopping and services as help	0.29	0.32
			0.13
427	Childcare as help	2.06	1.64
428	Help to an adult of another household	0.79	0.31
			0.07
			0.00
429	Other specified informal help	1.34	0.57
620	Unspecified productive exercise	0.04	0.00
621	Hunting and fishing	3.41	0.31
622	Picking berries, mushroom and herbs	1.11	0.10
629	Other specified productive exercises	-	0.06
931	Travel related to household care	1.54	2.89
			0.16
			0.12
936	Travel related to shopping and services	11.90	16.01
938	Transporting a child	1.77	2.53

939	Transporting an adult family member	0.79	0.74 0.10
941	Travel related to organisational work	0.68	1.19
942	Travel related to informal help	2.20	1.67
Sum		199.87	215.93
	Non-SNA household production	189.84	/

The activity categories *productive exercises* (codes 620 – 629) shall be specified at this point.

In Finland they are originally included in the production boundary. But since they are SNA activities that are already accounted for in the national accounts, they were deducted when determining the time volume on Non-SNA household production. This is done as well in the recalculation.

In the recalculation of the German HHSA these activity categories aren't deducted, in contrast. This is due to the differing relevance of the productive exercises in Finland and Germany.

In Germany these activities are presumed to be not as relevant for household production as in Finland. This can be seen as well, when comparing the amount of time spent on these activities in Finland and Germany.

In Germany they are therefore excluded from the accounts - from the satellite as well as the national accounts, and are not calculated.

Within the adaptation of the German production boundary in terms of the recalculation, these activity categories are introduced to the production boundary however. Since they are not covered by the national accounts in Germany, they don't present SNA activities. Consequently, information on time use on productive exercises provided by the time use survey aren't deducted when calculating the Non-SNA household production.

ANNEX V

Time use in Finland and Germany
according to the principal household functions

Time use in Finland											
housing		nutrition		clothing		care		volunteer work		transport	
code	minutes	code	minutes	code	minutes	code	minutes	code	minutes	code	minutes
320	0,29	310	0,05	330	0,07	380	0,10	410	0,10	931	1,54
321	16,44	311	30,94	331	7,11	381	8,76	411	2,41	941	0,68
322	4,21	312	2,95	332	2,40	382	0,33	412	1,52	942	2,20
323	5,99	313	9,19	333	5,02	383	4,76	419	0,07	938	1,77
324	11,66	314	1,29	339	0,37	384	0,96	420	0,41	939	0,79
329	0,19	319	0,06			389	0,11	421	0,65	354	3,40
350	0,10	620	0,04			391	0,76	422	2,20		
351	2,32	621	3,41			343	2,40	423	0,74		
352	2,31	622	1,11			344	0,46	424	1,54		
353	2,31							427	2,06		
359	0,10							428	0,79		
								429	1,34		
340	0,02	340	0,02			340	0,02				
341	3,09	341	3,09								
349	0,08	349	0,08			349	0,08				
300	0,33	300	0,33	300	0,33	300	0,33				
360	0,28	360	0,28	360	0,28	360	0,28	425	0,29	936	11,90
361	5,41	361	5,41	361	5,41	361	5,41				
362	0,46	362	0,46	362	0,46	362	0,46				
369	0,03	369	0,03	369	0,03	369	0,03				
371	0,60	371	0,60	371	0,60	371	0,60				
	56,21		59,35		22,08		25,84		14,11		22,27
TOTAL										199,86	
	28,12%		29,70%		11,05%		12,93%		7,06%		11,14%

The applied codes rely on the HETUS coding system.

The activity categories that were included in the production boundary of the recalculation are taken into account within this analysis.

The allocation of the activity categories to the principal household functions have been conducted according to the recommendation of Eurostat. See thereto Eurostat 2003 p. 22 et seq.

The lower activities are not related to one specific principal household function and are assigned partly to the several sections. This is as well described in detail in the Eurostat Task Force Report.

The same procedure has been applied for the analysis of the structure of time use in Germany. The detailed calculation is presented below.

Time use in Germany											
housing		nutrition		clothing		care		volunteer work		transport	
code	minutes	code	minutes	code	minutes	code	minutes	code	minutes	code	minutes
320	0,45	310	0,02	330	0,08	380	0,08	410	0,06	931	3,17
321	23,74	311	28,06	331	6,43	381	7,18	411	4,76	941	1,19
322	3,37	312	1,74	332	4,96	382	1,15	412	2,52	942	1,67
323	0,96	313	14,13	333	2,92	383	5,13	419	0,05	938	2,53
324	8,88	314	0,70	339	0,79	384	1,15	420	0,24	939	0,84
329	0,05	319	0,01			389	0,09	421	0,61	354	2,55
350	0,17	620	0,00			391	1,30	422	1,08		
351	2,04	621	0,31			343	3,26	423	1,03		
352	1,92	622	0,10			344	3,08	424	1,73		
353	2,36							427	1,64		
359	0,15							428	0,38		
								429	0,57		
340	1,76	340	1,76			340	1,76				
341	3,92	341	3,92								
349	0,03	349	0,03			349	0,03				
300	0,45	300	0,45	300	0,45	300	0,45				
360	0,01	360	0,01	360	0,01	360	0,01	425	0,45	936	16,01
361	5,65	361	5,65	361	5,65	361	5,65				
362	0,52	362	0,52	362	0,52	362	0,52				
369	0,03	369	0,03	369	0,03	369	0,03				
371	1,54	371	1,54	371	1,54	371	1,54				
	58,02		58,97		23,37		32,41		15,13		27,95
TOTAL										215,85	
	26,88%		27,32%		10,83%		15,01%		7,01%		12,95%

**Value of Household Production in Finland and Germany
Analysis and Recalculation of the Household Satellite Account System in both countries
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