

RELATING HOUSEHOLDS' FINAL CONSUMPTION
TO HOUSEHOLD ACTIVITIES:
SUBSTITUTABILITY OR COMPLEMENTARITY BETWEEN
MARKET AND NON-MARKET PRODUCTION*

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Household non-market production is not observed directly and therefore not known. This paper develops a methodological approach to the description of household production functions based on the assumption that household non-market production and household final consumption (as defined in National Accounts) are interdependent. What households produce and the way they produce depends to a large extent on what they may acquire on the market. Empirical data is provided both by the French National Accounts and Household Surveys.

The study presents a nomenclature of household output by type of product derived from the nomenclature of household non-market productive activities, to which final consumption products as described in the National Accounting nomenclatures are matched. Final consumption commodities are classified according to the role they play in household non-market productive processes, and subdivided into three categories: "substitute products" which save households from producing similar commodities in the home; "complementary products" which are not produced by households, but serve to produce other goods and services; "pure final consumption products" which are neither produced by households nor serve in any further productive process before being actually consumed in the proper sense of the term.

The combination of monetary and non-monetary indicators provides information on household modes of production and on trends of output over the past 15 years. The method is implemented here for all households, in a global approach. It may, nonetheless, be adapted and serve to study disparities among households stemming from their characteristics, or to estimate the implicit price at which household members value the use of their time; it may also be used to assess the impact of market output on the nature of household non-market production. National Accounts supply aggregate data on household final consumption, while time budget surveys constitute the main source of information on their activities.

The method used in this study consists of matching the official nomenclatures used to structure the two sets of data, each designed to describe different aspects of one and the same economic unit. To be more precise, this study attempts to establish a correspondence between the nomenclature of activities and products (N.A.P.) [1] used in the French National Accounting System and the nomenclature of activities used in the French Time Budget Survey [2]. This matching procedure aims at showing up the substitutability or complementarity effects between household non-market production and output of the market sector.¹

The assumption of interdependence between households' final consumption (as defined in National Accounts) and their non-market production leads to a classification of commodities acquired on the market into three categories: "substitute products", which the household purchases rather than producing them itself; "complementary products", which the household uses in order to produce other goods; and finally, "pure final consumption products", which households do not produce (or no longer produce) and which they neither transform nor use in any further productive process.

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¹Production of the market sector is taken here to mean all goods and services produced by institutional sectors other than households exclusive of non-corporate enterprises, be it market or non-market production in National Accounting definitions.

INTRODUCTION

The study of households may be approached from different perspectives. One may, for example, draw up a global picture of them through National Accounts data, or else focus on setting up a detailed description of their everyday life by resorting to data provided by Household Surveys. These two approaches are often considered incompatible and mutually exclusive. They do, however, reflect the character of households, which form both an Institutional Sector and a group of individuals organizing together the elements of everyday life. This study is based on the assumption that the two approaches are complementary. Using an empirical approach it compares aggregate and individual data, to describe a mutually dependent relationship between final consumption in the sense of National Accounts and household production outside the market sector.

From the National Accounts standpoint, the main function of households is consumption; all trace of goods is lost as soon as they enter the household, whereas in fact, through their non-market production activities, households transform or use many of these goods before they are actually consumed in the strict sense of the word. Considered in this light, the household becomes a micro-unit of production combining unpaid work and goods and services acquired on the market to produce a variety of commodities for themselves or for other economic units.

The matching of activities with purchases provides a description of ordinary households' modes of production in France at the present time. It may serve as a methodological basis for different lines of research:

- For the evaluation of the money value of household non-market production, it may serve to determine the implicit price at which households value the use of their time; this would be the price level which deters households from buying on the market and incites them to resort to household production.
- For the study of disparities between ways of life, it may be used to analyse the influence on households' non-market output of factors such as income, demographic characteristics, socio-professional status and area of residence.
- It can also be used to study the way household modes of production change over time and space in relation to what the market has to offer.

Such research leads to definition of monetary and non-monetary indicators from National Accounts and Household Survey data, some of which are quoted in this study, which is structured around three main points:

- I. Classifying household activities;
- II. Drawing up a nomenclature of goods and services produced outside the market by households, based on the classification of activities recorded by the French Time Budget Survey [2].
- III. Matching household productive activities and the products they buy (final consumption expenditure) classified according to the French National Accounts Nomenclature of Activities and Products (N.A.P.).

I. A CLASSIFICATION OF HOUSEHOLD ACTIVITIES

Household activities fall into two categories—productive and non-productive; as defined by T. P. Hill [3], a productive activity is any activity which could

be carried out with comparable results by an economic unit other than that which actually performs it. By the same token, any activity which would not give a comparable result if carried out by another economic unit is considered non-productive: eating, sleeping, practising sports are examples of non-productive activities, however vital they may be, whereas cooking or setting one's hair are productive activities, regardless of the quality of the result achieved.

When productive activities of households are taken into account in the French System of National Accounts (SECN), they are classified according to its principles. Output of the self-employed person is classified in the Household sector "when the activity is carried out by an economic unit which has no legal status other than that of the person involved" [4]. This is also the case with the non-market output of households which is taken into account in official statistics. It includes the production of housing services and the renting of premises for industrial and commercial use, the exploitation of family gardens and construction for own account of dwellings,² as well as the domestic services which "households produce for themselves in their capacity as employers of salaried domestic staff".

This classification breaks productive activities down into four categories and places all non-productive activities in a fifth category (cf. diagram 1).

1. Paid, declared, professional activities
2. Paid, non-declared, legal and illegal activities
3. Unpaid activities for the outside
4. Unpaid activities for the household
5. Non-productive activities.

Breaking activities down in this way makes it possible to identify each item with the institutional sector in the account of which its result is recorded.

1. *Professional activities* are broken down according to the professional status of the household members (salaried, non-salaried), their contribution to market or non-market production (National Accounting definition), and the institutional sectors under which their output is recorded. This gives:

- 1a. Activities of salaried workers, other than general government, contributing to market production recorded in the accounts of Non-financial Corporate and Quasi-corporate Enterprises, Credit Institutions and Insurance Enterprises.
- 1b. Activities of general government salaried staff contributing to non-market production recorded in the accounts of General Government
- 1c. Activities of non-salaried workers and the self-employed contributing to market production recorded in the Household sector
- 1d. Activities of domestic staff contributing to non-market production recorded in the Household sector.

2. *Paid, non-declared activities* are subdivided into:

- 2a. Legal activities
- 2b. Illegal activities

²The production termed here "non-market" because it is not actually exchanged on the market, is, when used, compared to a "market" consumption because production of this sort does have a potential market. Thus the term "market" takes on a somewhat different meaning according to the context in which it is used.

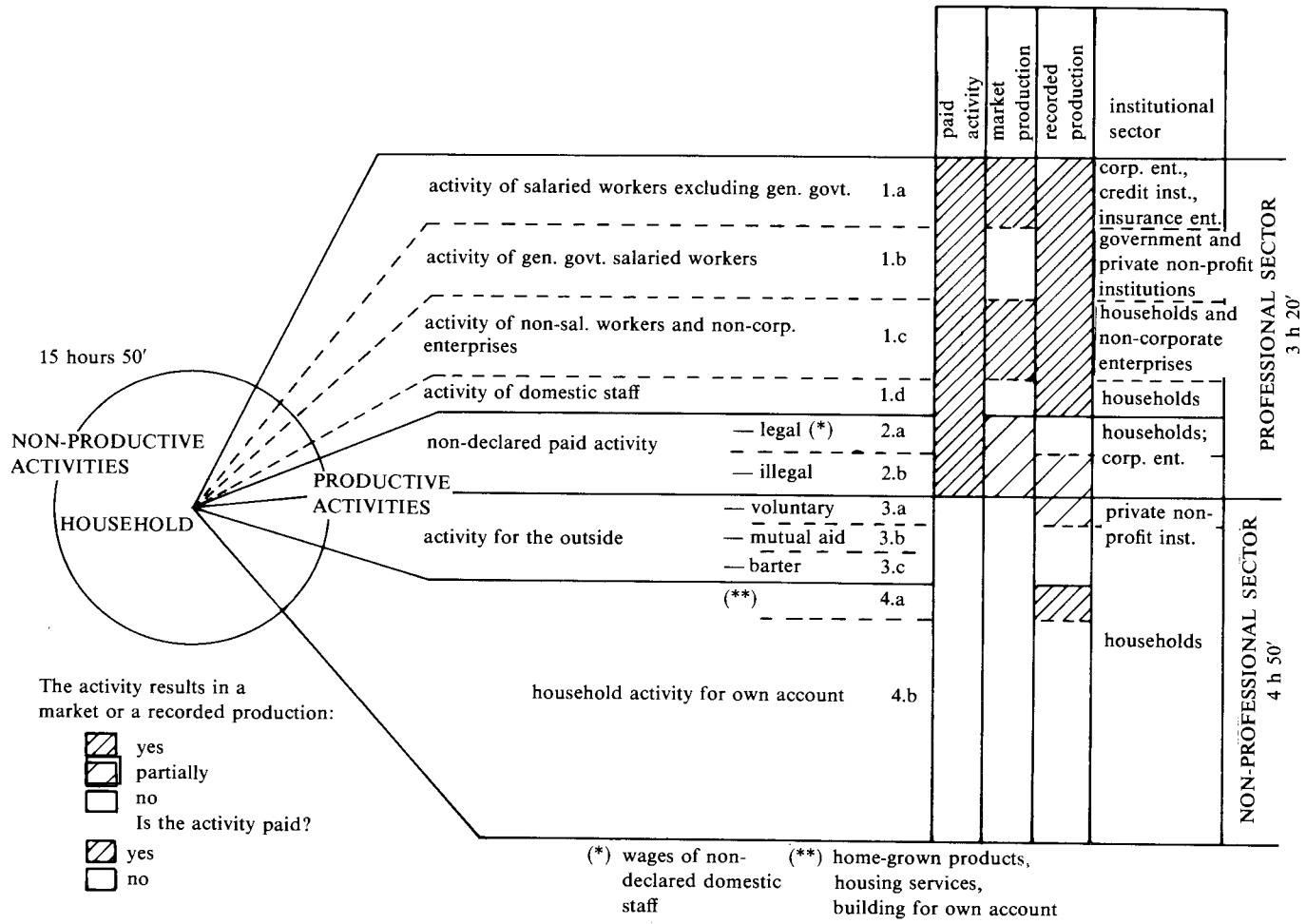


Diagram 1. Productive Activities of Households

These activities infringe the law to varying degrees: the former are by their very nature legally authorized, but they evade taxation and social charges and are thus illicit up to a point. The latter are forbidden by law, but in certain cases the income they generate is subject to a flat-rate tax. The production resulting from these activities has all the features of market production, but it is usually not recorded in official statistics, either because it is not known or because it is ignored out of principle.

3. *Activities “for the outside”*³ comprise all unpaid, productive household activities carried out for the benefit of an economic unit other than the household itself. The resulting production is non-market.

These activities include:

- 3a. Voluntary work contributing to non-market production which is partially recorded in the private non-profit institutions sector.
- 3b. Mutual aid, which covers all activities carried out free of charge by one household for another. The resulting production is non-market and is not recorded.
- 3c. Barter, which includes productive activities carried out by one household for another in exchange for a productive service in return. The production here is non-market and unrecorded, since no money changes hands.

4. *Household activities* comprise all unpaid productive activities of households carried out for the benefit of the household itself.

They include:

- 4a. Productive activities the result of which is recorded, so that they are treated as market activities, whereas in fact they bear the features of non-market activities: growing vegetables and fruit for home consumption, producing housing services for oneself (imputed rents), construction for own account. It is worth noting here that whereas gardening and building do in fact constitute activities of the household, producing housing services is a different matter, since being the owner of a dwelling reflects a status and not an activity. In this case the household owns a fixed capital asset and does not expend any working force.
- 4b. Unpaid productive activities, the output of which is not recorded. Household production results from this group of activities.

The above four categories provide the framework within which the different productive activities of households are carried out:

- Category number 1 considers the household as a provider of labour in exchange for monetary compensation; the transaction is carried out legally.
- Category number 2 concerns activities which are illegal.
- Category number 3 covers the non-market production of households for the outside.
- Category number 4 covers the non-market production of households for own account.

This classification is not based on distinctions between the products of household activities but rather on the context in which the activities are performed. Diagram

³“For the outside” refers to activities which contribute neither to market output nor to household output in the strict sense of the term, i.e. for the household itself.

1 specifies this context by showing whether the activity is paid, whether it contributes to market production (in SNA terms) and whether the resulting production is recorded in the National Accounts; it also identifies the institutional sectors in the accounts of which the production is recorded.

5. *Non-productive activities* are all grouped together.

The French Time Budget survey allows comparison of the relative importance, in terms of how much time is spent on each, of productive activities of a professional nature, productive activities of a non-professional nature and non-productive activities. In 1975 productive activities of a professional nature took up 14 percent of the average person's day, compared with 20 percent for non-professional productive activities and 66 percent for non-productive activities.

II. WHAT DO HOUSEHOLDS PRODUCE: GOODS OR SERVICES?

In Table 1 various criteria are used (cf. Diagram 2) to classify all activities of household members recorded in the French Time Budget survey. First, a distinction is made between professional and non-professional activities. In each of these categories activities are then further divided into productive and non-productive activities. In the non-professional productive activity category, a further distinction is made between activities which produce goods and those which produce services. Finally, those which produce services may transform either goods or persons.

However, this classification system calls for some remarks:

—The degree of pleasure or of constraint with which the activity is performed is not known and cannot be taken into account. We go no further than determining whether the immediate result of the activity could have been achieved by some other economic unit (private person or enterprise) and assume conventionally that activities are carried out in a neutral emotional context. This procedure leads without any doubt to a simplification of reality.

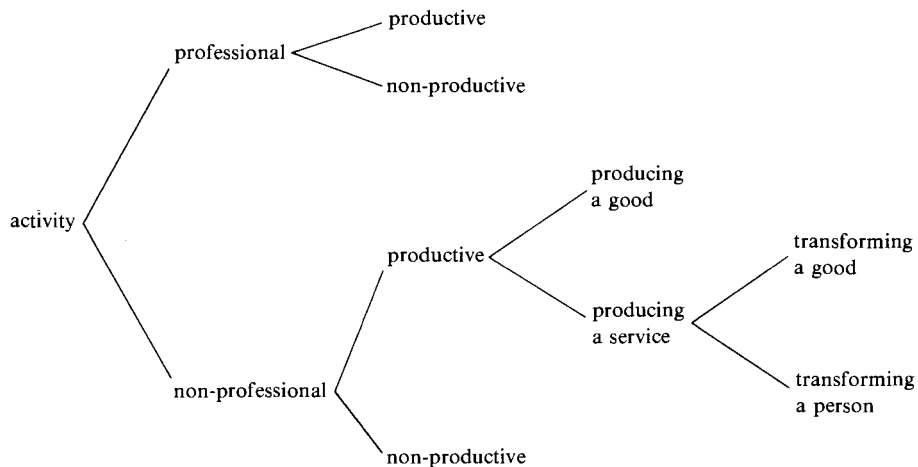


Diagram 2. Household Activity Classification Criteria

TABLE 1
HOUSEHOLD ACTIVITY CLASSIFICATION

Activity	Productive			
	Non-productive	Of a Service Which Transforms		
		Of a Good	A Good	A Person
Food preparation		×	×	
Cooking				
Purchase of everyday consumer goods			×	
Purchase of semi-durable and durable consumer goods			×	
Purchase of recreational goods			×	
Putting shopping away, tidying up			×	
Setting, clearing the table			×	
Washing the dishes			×	
Washing laundry			×	
Ironing			×	
Indoor cleaning (sweeping, washing, beds)			×	
Outdoor cleaning (pavement, garbage, shutters)			×	
Home repair and maintenance of:			×	
—clothing, footwear, laundry				
—heating and water supply (including fetching coal, etc.)			×	
—miscellaneous (including cars and two-wheeled vehicles)				
Car maintenance and servicing outside the home (garage, mechanic, etc.)			×	
Miscellaneous (eg. accounting, paperwork, filing) in the home			×	producing a management service
Administrative services outside the home			×	
Gardening		×	×	
Fishing-hunting		×		×
Pet care				×
Taking material or medical care of:				×
—adults				
—children				
—oneself (not including personal hygiene)				
Supervising homework and lessons				×
Reading, conversing with children				×
Indoor games and handicraft				×
Outdoor games and outings				×
Making things:		×		
—embroidery, sewing, knitting, etc.				
—do-it-yourself, carpentry, etc.				
Eating at home	×			
Eating out (restaurants, canteen. . .)	×			
Going to cafeterias, tea rooms, bars	×			

TABLE 1 *cont.*

Activity	Productive			
	Non-productive	Of a Service Which Transforms		
		Of a Good	A Good	A Person
Sleeping	×			
Personal hygiene, washing, dressing	×			
Personal medical care outside the home	×			
Full-time lecture attendance by students	×			
Part-time studies and evening classes	×			
Practising religion and attending religious services	×			
Taking part in religious associations	×			
Taking part in political party or union activities...	×			
—associations (family, parents...)				
—ceremonies (weddings, funerals...)				
Unpaid work for the community (charity, etc.)			×	×
Going to sporting events or variety shows	×			
Theatre, concerts, opera, ballet	×			
Cinema, museums, exhibitions	×			
Visiting and entertaining people	×			
Keep fit exercises	×			
Sports	×			
Reading novels, magazines	×			
Watching television	×			
Listening to the radio or to records	×			
Writing letters	×			
Conversing (including on the phone)	×			
Relaxing, thinking, doing nothing	×			
Artistic creation, sculpture, painting, writing...	×			
Outings, excursions	×			
Travel on public transport	×			
Travel on foot	×			
Travel using private vehicle (excluding outings)				×
Travel during working hours				×
Main professional activity		×	×	×
Secondary professional activity		×	×	×
Waiting or breaks at work	×			
Other waiting and queuing	×			

- The theoretically clear distinction between activities which produce goods and those which produce services, the former resulting in the creation of new goods and the latter in the transformation of existing goods or persons [5], is not always quite so easy to make in practice. The dividing line between goods and services is sometimes rather indistinct, and it is not clear, in the process of transforming initial goods, at what precise point a new one is created. What is meant by “a new good”? Does it mean a good which fulfils a function other than that of the intermediate goods used to produce it? Or, does it mean a good transformed to the point of rendering its intermediate constituents unrecognisable and impossible to single out physically? The theoretical issue raised by this question goes beyond the scope of this paper, and the answer given to it here is often empirical. The question arises in the classification of culinary, needlework and do-it-yourself activities, where distinction must be made between “creation” and “transformation”.
- Journeys are not usually included in household production for own account. However, the French Time Budget survey provides a detailed list of travel activities, indicating the purpose of the journey and the means of transport used. It is therefore possible to apply the criteria defining productive activities and to single out those journeys which count as producing a transport service (see Diagram 3). Households are considered to produce a transport service when they use a private vehicle purchased on the market to travel to work and back, to give a third party a lift, to carry out a productive or non-productive domestic activity (journeys to shops, to receive medical attention, to settle administrative matters, or for leisure or holiday activities). In all of the above cases the transport could have been provided by an economic unit other than the household itself and there exists a substitute on the market: public transport. [6] On the other hand, journeys on foot and outings are not counted as productive activities out of concern for coherency with the classification criteria.⁴ Journeys made in private vehicles during work are counted as professional activities although there are cases when they may be considered to constitute a transfer from the household to the market sector (for example, when the employee drives his own vehicle in the course of his professional duties).
- The “household accounting” activity produces a management service. “Pet care” implies the production of a service which does not fit into any of the above categories, and the production of housing services does not correspond to any activity.
- The professional activities of households are highly aggregated and, amongst them, some should be considered as non-productive: waiting or breaks at work, for example, cannot be carried out by any other economic unit and thus bear the features of non-productive activities according to the criteria of this classification.

⁴It may, however, appear questionable to classify all journeys on foot as “non-productive activities”. Though this classification is in keeping with the criteria, it appears somewhat paradoxical in some cases, when the purpose of the journey is taken into consideration. The person who walks to the shops and carries heavy loads back is considered as non-productive in his travel, whereas the person who drives to the shops, saving himself effort and pain, produces a non-market transport service.

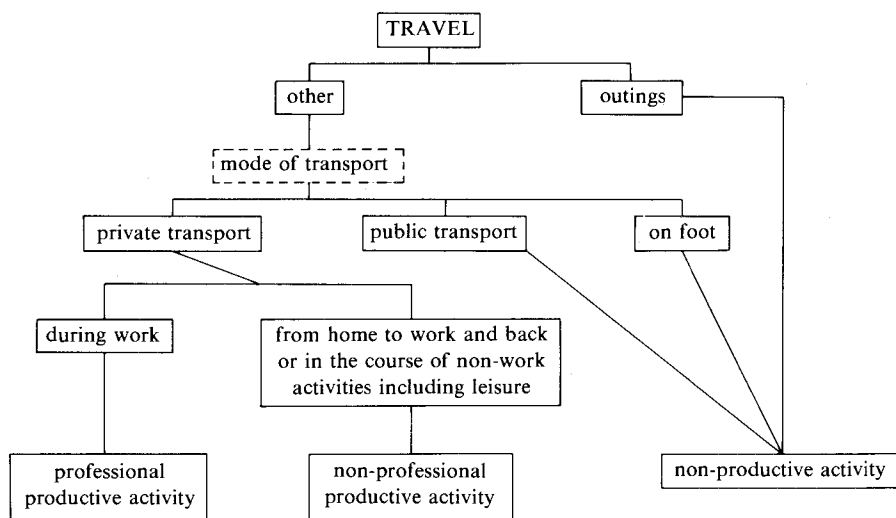


Diagram 3. Classification of "Travel" Activity

The French Time Budget survey provides data on time spent per activity listed in a detailed nomenclature of household members' professional and non-professional activities. It does not, however, indicate the nature or the volume of resulting production. The lack of quality standards and minimum and maximum time thresholds for the performance of domestic tasks, added to the fact that virtually nothing is known about productivity outside the market sector, constitutes a major obstacle to the evaluation of household non-market production. One may go no further than formulating some simple assumptions as to the size and development of household production based on monetary and non-monetary indicators.

III. PRODUCTIVE ACTIVITIES OR CONSUMER EXPENDITURE?

The method developed above for describing household modes of production is based on the assumption that market production and household production are interdependent. The nature and volume of goods or services produced by households are determined by the nature of the goods and services the market offers them and by the composition of their final consumption budgets.⁵

The commodities⁶ which households buy fall into three categories:

- Commodities which households may easily produce themselves on a regular basis: these are "substitute products".
- Products which households do not produce because their production requires advanced technical know-how which household members do not commonly have, or because they require a technological setup incompatible with the size

⁵It is not the object of this paper to explain household consumer behaviour or to analyse factors which determine how they spend their monetary income. Final consumption expenditure serves as a basis for describing household modes of production.

⁶These may be goods or services.

of a household (household appliances, for example). These products are transformed or used by households to produce other goods or services. They are “complementary products”.

—Products which households do not produce (for similar reasons) and which they do not use to produce other goods or services: these are “pure final consumption products”.

An increase in the consumption of substitute products would indicate a decrease in household production, whilst increased purchasing of complementary products would be a sign that household production is on the rise. Increased buying of the latter category of products would reflect, among other things, the impact of technological progress accomplished in the market sector on household modes of production [7]. On the other hand, the conclusions to be drawn from the development of pure final consumption buying are not so clear. This category includes traditional products which households have all but stopped making (socks, tights and stockings, for example) as well as newer, more sophisticated services (health services, for example) for which there is an increasing demand. The rising consumption of such products may be taken as an indicator of improvement in the quality of life but also as a sign that households are increasingly dependent on advanced technology for the satisfaction of their needs.

This approach to the household as a producer and to its different modes of production leads to:

1. Drawing up a classification of the types of products households produce matching their activity nomenclatures;
2. Breaking down final consumption goods and services (as defined in SNA) into categories of substitute products, complementary products and pure final consumption products;
3. Pinpointing some monetary and non-monetary indicators of household production levels and trends.

The result of this three-step process is presented in Table 2.

1. *Classification by types of household product* [8]

Column 1 shows the classification by type of product:

- I. Material goods
 1. Perishable
 2. Semi-durable
 3. Durable
- II. Services applied to goods
 1. Catering services
 2. Cleaning services
 3. Supply services
 4. Storage services
 5. Repair and maintenance services
- III. Services applied to persons
 1. Material care for children
 2. Material care for adults
 3. Medical care in the home

TABLE 2
HOUSEHOLD ACTIVITIES AND FINAL CONSUMPTION EXPENDITURE

Production	Products Purchased by Households											
	R	U	Activity				Which Households May Produce		Not Produced by Households			Consumption Index (I) and Trend (→) or Ownership Rate (O.R.)
			Nature	Time Spent	Substitute	Consumption Index (I) and Trend (→)	Used in Household Production					
							Durable Goods	Intermediate Goods	Not used in Household Production			
1	2	3	4	5	6	7	8	9	10	11		
<i>1. Material goods</i>												
<i>1. Perishable goods</i>												
		×	Making edible goods	n.a.	Bread	I: 91 ↘	Gas, electric cooker				O.R.: 84%	
					Pastries, biscuits crackers	I: 142 ↗	Electric hot plates Separate oven units				O.R.: 6%	
		×			Chocolates, confectionery	I: 145 →		Concentrated and powdered milk			O.R.: 21%	
		×	Crop growing, animal husbandry,	n.a.	Vegetables, fruit, Potatoes	I: 83 →	Vegetable garden, orchard				I: 90 ↘	
		×	fishing, hunting	2	Eggs, fishing products meats, poultry, rabbits	I: 132 ↗	Chicken run				O.R.: 41%	
					Liquid milk	I: 121 ↗	Hutches Rifle				O.R.: 14%	
		×						Chemical products Flowers, plants, seeds			O.R.: 8%	
											O.R.: 18%	
		×	Winemaking, distilling	n.a.	Honey Wine	I: 85 ↘	Other household glassware				I: 175 →	
		×	Cider making		Brandy, cider, other alcoholic beverages	I: 140 →					I: 134 ↘	
											n.a.	

TABLE 2 *cont.*

Products Purchased by Households										
Not Produced by Households										
Production	Activity		Which Households May Produce				Used in Household Production			Consumption Index (I) and Trend (→) or Ownership Rate (O.R.)
	R	U	Nature	Time Spent	Substitute	Consumption Index (I) and Trend (→)	Durable Goods	Intermediate Goods	Not used in Household Production	
1	2	3	4	5	6	7	8	9	10	11
1. Processing food <i>cont.</i>		x			non-alcoholic beverages	I: 154 ↗	Toaster			O.R.: 34%
		x			Ice cream	I: 310 ↗	Ice cream churn			O.R.: 12%
		x			Desserts	I: 131 ↗	Hardware, kitchen utensils			I: 86 ↘
		x			Cheese	I: 147 ↗				
		x			Fresh dairy products	I: 190 ↗	Yoghurt maker			O.R.: 14%
	x				Butter	I: 107 →		Oils, margarines		I: 113 ↘
		x			Broths, soups	I: 110 →		Flour, semolina, starch		I: 110 ↘
					Restaurants, canteens	I: 175 ↗		Pasta, couscous		I: 116 ↗
					Domestic services	I: 78 ↘	Coffee grinder	Rice		I: 152 ↗
							Electric coffee-maker			O.R.: 80%
								Salt		I: 122 ↗
								Condiments		I: 217 ↗
								Sugar		I: 85 ↘
								Coffee, tea, infusions		I: 130 →
2. Cleaning services		x	Dish washing	28	Domestic services	I: 78 ↘	Dish washer			O.R.: 23%
		x	Laundry, ironing	16	Laundries, dry cleaners	I: 82 ↘	Washing machine			O.R.: 72%
					domestic services	I: 78 ↘	Portable washing Machine			O.R.: 13%
							Spin dryer			O.R.: 6%
							Drying machine			O.R.: 2%
							Iron			O.R.: 94%

	×	House cleaning	33	Domestic services Sundry services: cleaning, waste disposal, hygiene	I: 78 ↘ I: 158 ↗	Vacuum cleaner Polishing machine		O.R.: 71% O.R.: 8%
							Soaps, detergents, cleaning products	I: 155 ↗
3. Supply services								
Foods and other perishable goods	×	Shopping	19	Domestic services	I: 78 ↘			
Semi-durable and durable goods	×	Shopping	6	Domestic services	I: 78 ↘			
Heating and water (including use of durable goods)	×	Chopping wood, × fetching water, × fetching fuel oil	2	Forestry products	I: 37 ↘	Central heating Other heating appliances Water pumps		O.R.: 65%
								n.a.
							Coal, coke, fuels Electricity, gas	O.R.: 5% I: 37.27, 64 ↘ I: 352, 235 ↗
							Urban central heating, running water	I: 181 ↗
							Infrastructure services	n.a.
4. Storage services								
Foods	×	Putting away	4	Domestic services	I: 78 ↘	Refrigerators Deep freezers Combined fridge- freezers		O.R.: 83%
Semi-durable and durable goods	×	Putting away				Storing cupboards Cellars, wine cellars		O.R.: 23% O.R.: 13%
								n.a.
5. Repair and maintenance services								
Semi-durable goods	×	Sewing, mending altering	4	Domestic services Shoe repair Clothing alterations	I: 78 ↘ n.a. n.a.		Thread, wool Other hosiery goods	I: 83 ↘ I: 116 ↗ ↘
Durable goods								
Cars, cycles, motorcycles	×	Vehicle repair and maintenance	2	Car repair services	I: 152 ↗		Tyres and inner tubes	I: 149 ↗
Household equipment	×	Repairs to other durable goods		Other repairs	I: 108 ↗		Fuels, lubricants	I: 154 →
Dwelling	×	Repair, decorating		Building engineering	I: 128 →	Power tools, drill, etc.		O.R.: 36%
							Paints, varnishes Other paracheical products Sundry industrial products	I: 123 ↘ I: 185 →

TABLE 2 cont.

Products Purchased by Households										
Which Households May Produce							Not Produced by Households			Consumption Index (I) and Trend (→) or Ownership Rate (O.R.)
Production	R	U	Activity		Substitute	Consumption Index (I) and Trend (→)	Used in Household Production		Not used in Household Production	
			Nature	Time Spent			Durable Goods	Intermediate Goods		
1	2	3	4	5	6	7	8	9	10	11
Garden (ornamental or vegetable)		×	Gardening	9	Domestic services	I: 78 ↘	Lawnmower Garden tractor			O.R.: 20% O.R.: 9%
<i>III. Services which transform persons</i>										
1. Material care of children		×	Washing, feeding looking after children	16	Domestic services Day nurseries, boarding schools Homes for handicapped children	I: 78 ↘ n.a. n.a.				
2. Material care of adults		×	Care to bedridden, handicapped adults		Domestic services Homes for handicapped adults and the elderly	I: 78 ↘				
3. Medical care at home		×	Care for oneself and for others	3	Visits to doctors Going to hospital	I: 306 ↗ I: 266 ↗			Doctors, dentists, Lab. tests Reeducation cures	I: 205 ↗ I: 479 ↗ I: 247 ↗ I: 108 →
							Therapeutical apparatus and equipment	Medicines and other pharmaceutical products		I: 291 ↗
4. Educational services to children		×	Supervising homework and lessons	2	Domestic services	I: 78 ↘			Private schooling State schooling	I: 172 ↗ n.a.
5. Recreational services to children		×	Domestic services, playing with children, taking them out	3	Domestic services	I: 78 ↘			Recreational, sports and cultural services for children	n.a.

6. Personal beauty services	×	Hairdressing, making up, shaving	33	Hairdressing and beauty parlour	I: 121 ↘	Hair dryers Heating tongs Electric razors		O.R.: 63% O.R.: 17% O.R.: 50% I: 180 ↗
IV. <i>Pet care</i>	×	Taking care of animals	5	Animal foods Miscellaneous market services, homes for animals	I: 555 ↗ n.a.		Veterinary surgeons	I: 198 ↗
<i>V. Services transforming goods and persons</i>								
Transport services	×	Travel to and from work	11	Public transport Services:		Purchased cars		O.R.: 67%
	×	Travel to accompany someone	1	Urban	I: 160 →	Motorized two-wheeled vehicles		O.R.: 25%
	×	Travel for leisure (excluding holidays)	13	Non-urban road transport	I: 133 ↘			
	×	For personal care outside home	4	Rail	I: 147 →	Bicycles		O.R.: 47%
	×	For holidays		Air	I: 290 ↗ →	Hired vehicles		I: 499 ↗
				Sea	I: 93 ↗ →		Fuels, lubricants	I: 154 →
				Door-to-door sales	n.a.			
				Mail order sales	n.a.			
				Home deliveries	n.a.			
				Taxis	n.a.			
				Removals	n.a.			
	×	Travel for shopping	5					
<i>VI. Management services</i>								
Related to income	×	Bookkeeping, paperwork, bills, mail	5	Domestic services	I: 78 ↘		Services rendered to enterprises (legal, financial)	n.a.
Related to property and real estate	×	Telephone				Telephone	Post and telecommunications	I: 448 ↗
Related to insurance							Office supplies	O.R.: 80% n.a.
Related to dealings with general Government							Office equipment	I: 324 ↘ I: 211 ↘
							Insurance and mutual companies	I: 232 ↗
							Financial services	
<i>VII. Housing services</i>								
Computed rents	×	No activity					Purchase of dwellings	

I: Consumption index for 1984 in constant Francs (1970 = 100).

O.R.: Ownership rate (from household surveys).

↗ ↘: Consumption volume rises, falls between 1980 and 1984.

Time spent: expressed in minutes per day per adult.

R: Means that consumption of the home-produced commodity is recorded in the SNA.

U: Means that consumption of the home-produced commodity is unrecorded.

n.a.: Figures not available.

4. Educational services for children
5. Recreational services for children
6. Beauty care

IV. Pet care

V. Transport services transforming goods and persons

VI. Management services

VII. Housing services

Four types of services which do not conform to the classification criteria are singled out:

- Services to animals (pet care), on which French households spend as much time as they do playing with children.
- Transport services, which it is difficult to break down into transport of goods and transport of persons: in the everyday life of households these two activities are often performed simultaneously.
- Management services, which transform neither goods nor persons.
- Housing services.

The products of activities which are recorded in SNA appear in column 2 (R) and those which go unrecorded appear in column 3 (U).

2. Classification of Final Consumption Products (SNA definition)

The matching of household production (column 1) with productive activities (column 4) serves as reference for the classification of goods and services purchased by households in order to determine their modes of production, using the SNA final consumption Nomenclature of Activities and Products, the Nomenclature by Product or the Functional Nomenclature.

The notion of “substitute” products (column 6) and “complementary” products (columns 8 or 9) refers back to the criteria defined earlier. However, when applied to items of official nomenclatures it requires some adjustment.

- Substitute products are classified with regard to their degree of elaboration: for example, the purchase of fresh vegetables is considered as a substitute for home grown vegetables (production of goods), whilst the purchase of tinned vegetables is a substitute for preparing them at home (production of a service). Certain products therefore appear as partial substitutes when they reduce the number of activities required to achieve output. Others are total substitutes, for they obviate the activity altogether. The purchase of ready-to-cook peeled potatoes is an example of a partial substitute, whilst a meal in a restaurant is an example of a total substitute.
- Complementary products include both durable goods which are used in the course of a household production process and intermediate goods or services which are consumed. These goods, which households do not produce, are grouped according to the type of product they serve to produce.
- “Pure final consumption” products (column 10) are related to activities producing commodities which fulfill a similar function.
- How strictly products are classified as “substitute”, “complementary” or “pure final consumption” depends on the way they are grouped together in official nomenclatures. When the required breakdown is not available, the product is

attributed to the activity which incurs the main part of the expense. Even though household members may knit socks, this item cannot be dissociated from stockings and tights, which incur the major part of expenditure in this group. This item is therefore found amongst the goods not produced by households under the heading "semi-durable goods". The same logic leads to classifying the hire of consumer durable goods, which include motor vehicles, as a complementary service to the production of transport services. Since no breakdown of electricity, gas and water consumption is available, this item is attributed wholly to the production of heating and water supply services, as complementary intermediate commodities.

—The production of housing services for own account (imputed rents) is a substitute for real rents or for boarding services by the year in hotels, boarding houses or homes for the elderly. Boarding schools, which provide boarding services for children, are not considered as a substitute for this production since children alone do not count as households.

The resulting classification (shown in Table 2) provides a description of household modes of production by type of product. Adding quantitative indicators helps assess substitution or complementarity effects.

3. *Quantitative Indicators of Household Production*

For the reasons given above, household production cannot be observed directly. It is possible, however, to pick out from National Accounts series and Household Surveys indicators by which one may presume the level and trend of output for some commodities.

Some of these indicators are given in Table 2: column 5 shows the average time spent per day and per person aged 18 or over in 1975 in France [2]. This gives an indication of the relative importance of the different activities. The next French Time Budget Survey (1985/1986) will provide valuable information on how household activities have developed over the past ten years.

Volume indexes of final consumption (SNA definition) [9] for substitute products (column 7, marked I) give a very general picture of substitution effects: one may assume that the higher the figure for 1984 (in relation to the reference year 1970) the greater the substitution of market output for household production and vice versa. These data point to a marked preference among households for the processed food-stuffs available on the market (ready-cooked meals, for example) [10]. On the other hand, it appears that household production has gone up, to the detriment of market output, in the case of laundry services.

The arrows show the trend in consumption between 1980 and 1984 [9]. The beginning of the 1980s seems to have marked a change in the final consumption trend of some products: clothes are one example. This indicator is certainly too general to provide a clear explanation for the recorded decrease in the purchase of clothes, but one may nevertheless wonder to what extent it was accompanied by an increase in household production.

Column 11 provides indicators on complementary commodities: the percentage figures (labelled O.R.) indicate the ownership rates of each durable good [11], [12]. They give an indication as to the likely mode of household production;

the high proportion of households owning a washing machine, for example, may be a reason for the drop in consumption of the market substitute service: households increasingly provide this type of service themselves and are highly equipped in durable goods useful for this production. Similarly, it would seem that household production of transport services has risen: the rate of car ownership is high, whilst consumption of public transport services is seen to stagnate. The assumed increase in household production of this service is a consequence of the development of market output of automobiles. This is a good example of the interdependence of market production and household production.

The indicators provided in Table 2 give at most a basis upon which to build assumptions on modes of household production product by product. It would be advisable to add other appropriate and available indicators [13], [14] in order to confirm or, on the contrary, disprove the presumptions the indicators in Table 2 suggest. Examples of such indicators useful in analysing household production could be: the number of meals eaten outside the home, [9], the number of miles travelled [15], or the frequency with which certain activities are performed.

Since there is no direct way of observing household production, for it is not exchanged on any market nor is it subject to any explicit standards, this indirect methodological approach may be considered to provide an analytical framework adaptable to the various perspectives from which household activities are viewed. Appropriate monetary and non-monetary indicators need to be built, in compliance with the object of the research. These indicators vary according to activities and modes of production, which in turn vary over space and over time under the effect of multiple factors, thus differentiating households' modes of life.

This global approach to household modes of production, which makes no distinction between different types of households, leads to a classification of home produced goods and services matched with commodities acquired on the market, qualified as "substitute", "complementary" or "pure final consumption" products. Like all aggregative processes, this one introduces some degree of abstraction from reality, concealing specific aspects of household production which a finer breakdown of the sector would reveal. It is, for example, quite unlikely for a household living in the centre of a large town to produce its own wine or cider, whereas the probability of home production of such goods is high for a rural household living in the South of France or in Normandy. Equally so, it is unlikely for an engineer- or worker-household to produce the medical services which they require, whereas this type of production is frequent in the household of a doctor. Therefore, the classification of final consumption commodities presented here remains quite theoretical when applied to more finely defined groups of households, differentiated for example by their monetary income, their socio-professional status, their demographic characteristics, their area of residence, and also their physical and intellectual capital.

The sensitivity of household production to the opportunities households have to resort to producing for themselves or buying on the market leads to instability in the categories of substitute, complementary or pure final consumption commodities. The fruit or vegetable bought on the market only constitutes a substitute to home production for those households who actually have access to a garden or an orchard. These same products should be classified as complemen-

tary or pure final consumption goods for all households who have no other choice but buying them on the market if they wish to consume them. Specifying the degree of instability of these three categories of final consumption commodities would show the incidence of market output and accessibility to it on household production, but also, the extent to which households depend on the market sector to acquire the commodities necessary for the satisfaction of their needs.

REFERENCES

- [1] Nomenclature d'Activités et de Produits, 1973, No. 1402-I, 1980 Journal Officiel de la République Française.
- [2] Huet, M-T., Lemel, Y., and Roy, C., Les Emplois du Temps des Citadins, *Archives et Documents* No. 59, October 1982, INSEE, Paris.
- [3] Hill, T.P., Do it Yourself and G.D.P., *Review of Income and Wealth*, March 1979.
- [4] Système Elargi de Comptabilité Nationale—Méthodes, INSEE, Paris.
- [5] Hill, T. P., On Goods and Services, *Review of Income and Wealth*, December 1977.
- [6] Stoclet, D., Les Transferts entre Marchand et Domestique. Travail des Femmes, Loisirs des Hommes, Observations et Diagnostics Economiques, *Revue de l'O.F.C.E.* No. 3, February 1983, Paris.
- [7] Gershuny, J. and Miles, I., *The New Service Economy*, Frances Pinter (Publishers), London, 1983.
- [8] Archambault, E., Travail Domestique et Emploi Tertiaire: Substitution et Complémentarité, in L'Emploi du Tertiaire, M. Vernières (sous la direction de), *Economica*, 1984, Paris.
- [9] La Consommation des Ménages en 1984, Collections de l'INSEE M112/1985
- [10] Mercier, M. A., Consommation et Lieux d'Achat des Produits Alimentaires en 1981, Collections de l'INSEE M108/1984
- [11] Verger, D., Les Disparités d'Equipement des Ménages en Biens Durables, Enquête Equipement Ménager 1979, *Archives et Documents* No. 57, October 1982, INSEE, Paris.
- [12] Valdelièvre, H., L'Equipement des Ménages en Biens Durables au Début 1983, Les Collections de l'INSEE M104/1983
- [13] Audirac, P. A., Logements—Immeubles, Collections de l'INSEE M107/1984.
- [14] Moutardier, M., Les Budgets des Ménages en 1978-79, Collections de l'INSEE M97/1982.
- [15] Lefol, J. F., Les Déplacements Quotidiens en 1981, *Premiers Résultats* No. 27, November 1984, INSEE.