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**Women, Men and Housework
Time allocation: Theory and Empirical Results**

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Time allocation: Theory and Empirical Results

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Abstract

The gender relationship, characterised to a high degree by the gender-specific division of labour into paid work and housework, is in the process of change. In Germany, however, housework continues to be considered a typically female chore. The present study considers the empirical relevance of three theoretical approaches to gender-specific time allocation from the economic and social sciences. The various models are assessed using the Socioeconomic Panel (SOEP) for the year 2000. The estimation results imply that no single theory can be favoured as opposed to any other. Accordingly, prevalent approaches to the explanation of household division of labour are at the same time equally suited and unsuited to grasping the problem empirically. A person's individual housework time is determined by both economic and ideological characteristics. Following on from the evaluation of different theories, an approach is evaluated which simultaneously takes individual work time and paid work time into account. This *integrative* evaluation shows that the economic rational choice model finds only limited application in the area of private households, thus pointing to the necessity for an interdisciplinary treatment of the subject.

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1 Introduction

The gender relationship, characterised to a high degree by the gender-specific division of labour into paid work and housework, is in the process of change. In Germany, however, housework continues to be considered a typically female chore. Whilst paid work is remunerative and socially secured, housework is unpaid and is often deemed a low-value occupation. The results of a time-budget study in the years 2001/2002, recently published by the Federal Statistical Office (2003), supply an up-to-date insight into the time activities of Germans. Time activities in respect of paid and unpaid work are an important aspect of this study. The economic significance of unpaid work is estimated by the Federal Statistical Office at 684 billion euro.[2] Hence, the gross value of private households can be equated with the cumulative gross value of German industry, with the sectors commerce, hotel and restaurant industry, and transport. Approx. 61% thereof is performed by women.[3] Correspondingly, the performance of unpaid work is an important economic factor in Germany and at the same time a main feature of the traditional inequality of the sexes.

The dissolution of gender differences is safeguarded by law in many areas of society.[4] Despite statutory equality, numerous empirical studies demonstrate a discrimination of the female sex in the labour market. Thus, even where an equal standard of education prevails, Lauer (2000) detects job discrimination – in the form of smaller income – against women in the labour market. This may be ascribed to the fact that in Germany it is by tradition predominantly women who assume the task of bringing-up the children within the household division of labour. Beblo and Wolf (2000) confirm these results. This situation stands in contrast to other European countries (Henkel, 2003), a fact seemingly influenced by the political environment. Anderson and Levine (1999) show that in the case of the USA the presence and cost of external childcare provision play an important role in the employment decisions of women. Particularly, it is less well-educated women who are more strongly influenced by the costs for external childcare, their offer of paid work diminishing with the costs for childcare.

In Germany, it is especially women who, following their (statutory) schooling and pursuit of supplementary educational measures such as further schooling, job-training or higher studies, sooner or later in their life cycle see themselves confronted with the dilemma described above. Above all, it is these well-educated and highly qualified women who decide not to have a family. Forty percent of women academics in this country have no children (Henkel, 2003). This decision is reinforced by the fact that interruptions in employment lead to loss of pay (Beblo, Wolf, 2002).

The study by Künzler, Walter, Reichart and Pfister (2001) provides an up-to-date view of the situation in Germany. In the context of the European Network on Policies and the Division of Unpaid and Paid Work the authors examine the gender-specific division of labour in Germany. The authors find that there is a highly pronounced gender-specific division of labour in Germany. In West and East Germany women perform approx. twice as much housework as men. They do, however, point to the fact that there are still differences in the household division of labour between East and West Germany. This result makes it clear that the social and political

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[2]Evaluated at the net wage of a housekeeper

[3]Statistisches Bundesamt (German Federal Statistical Office, 2003, p.9.)

[4]Cf. the broschure from the Bundesministerium für Familie, Senioren, Frauen und Jugend (Federal Ministry for the Family, the Elderly, Women and Children), 2001.

environment affects the structure of the division of labour between man and woman. Künzler et al. (2001, p. 69) show that gender-specific differences in time allocation cannot be fully explained by traditional sociological theories. A more recent empirical study on the subject of time allocation is offered by Beblo (2001). It contrasts various economic theories and comes to the conclusion that *gender issues* such as social norms, values and cultural conventions have to be more strongly considered within economic theory.

Approaches to explaining the gender-specific use of time and the ensuing division of labour come from various areas of the social sciences. Sociological (Parson, Bales, 1955 or Blood, Wolf, 1960, int. al.) and economic research (Becker, 1965 or Becker, Stigler, 1977), especially, supply a theoretical basis on which current studies can continue to build.

The incentive for this study is to be found in the empirical application of sociological and economic theories and in assessing which approach seems best suited to explaining gender-specific differences in time allocation. The paper is for the most part empirically aligned. In a first step, prevalent theories are empirically evaluated and compared using SOEP data (Socioeconomic Panel)[1] for the year 2000. The analysis shows that none of the theories is predominant, leading to the conclusion that there is an apparent necessity for an integrative approach which transcends the parallelism of the various research trends, whilst combining and empirically evaluating the innovative and central theses of the various theories. For this reason, the effects of determinants in the various approaches will be tested using a combined model in the second part of the paper. In addition, the study will use estimate methods to take account of the fact that individual decisions concerning housework and paid work display interdependencies. Owing to its cross-sectional nature, the study will not address the broader political environment and the technological revolution as factors influencing the gender-specific division of labour, instead concentrating on demographical, social and economic determinants.

In Section 2, the basic notions and hypotheses of three different theoretical approaches from the fields of sociology and economics are to be discussed. The depiction of the theories serves as an incentive for the empirical part of this study. Subsequently, in Section 3 both the data basis used and the socioeconomic attributes explaining individual time allocation are to be presented, in addition to a descriptive survey of the variables. Sections 4 and 5 present the results of the empirical study.

2 Theoretical Approaches

The question concerning the causes and factors underlying gender-specific differences in personal time allocation has come to be a subject of research for various social sciences. In the past decades numerous quite clearly distinguishable approaches have been developed. In the following chapter, three different theoretical approaches to time use from the areas of economics and sociology are to be initially presented. The classification of the individual approaches at hand follows Godwin (1991) and differentiates between three basic theories: The (neo-classical) economic approach, the household-economic approach and the sociological approach. As was established at the outset, one aim of this study is to examine the substance of the empirical

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explanations deriving from the various perspectives. The operative classification is characterized in the first instance by the fact that the three approaches each identify and deploy their respective determinants in explaining gender-specific differences in time allocation. Whilst the distribution of power and ideological attributes play a considerable role within sociology, economic approaches are oriented on the economic rational choice model (Ott, 2002). The initial, seemingly artificial subdivision of the two economically oriented approaches mainly serves the purpose of being able to empirically check in the second part of the study the extent to which the inclusion of socioeconomic control variables represents an improvement as opposed to the *purely* economic model.

The chosen empirical application of the theoretical approaches initially aligns itself with the control variables common in the literature.[5] In addition, further socioeconomic attributes from the SOEP are incorporated into the study, to the extent that these appear to be theory-compatible (e.g. party affiliation as an indicator for a person's ideological orientation).

2.1 Economic theory of time utilisation

Economic approaches to the problem of a private household's allocation decision apply the basic suppositions of neo-classical rational to human behaviour in a household context. Gary S. Becker (1965), who is regarded as the founder of so-called *New Home Economics*, developed the first systematic approach to a general theory of time allocation.[6] This approach allows for the first time the use of neo-classical instruments in relation to gender issues. Against this backdrop, the private household can be seen as an economic institution which, using market commodities and time utility, produces benefit-enhancing commodities for household members. A household's simultaneous, mutually exclusive decision in favour of housework, paid work or leisure is defined in this context taking into consideration the relative productivity of the individual household members. By specialising in different activities various members can make use of comparative production advantages. Persons who can offer a higher potential income will specialise in paid work, whilst persons with a relatively modest expected income perform the (unpaid) housework which arises (including e.g. childcare). The central variables of this approach include family income and labour-market productivity – depicted by the opportunity costs of housework.[7] The preferences in respect of the personal benefits of housework are deemed to be constant for all household members (Becker, Stigler, 1977). The theory was subsequently augmented by further explanatory factors. So-called *taste shifters* such as the criteria education, age and children were taken into account. These are understood to be individual characteristics which, at least temporarily, adjust the benefits level of a household.

The micro-economically grounded concept behind Becker's theory, based on a utility-maximisation process in the context of rationality, defined preferences and complete information, is liable to considerable criticism due to its constraining suppositions. Besides the fundamental repudiation

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[5]For a survey of the empirical studies from the area of household production cf. int. al. the metastudy by Godwin (1991).

[6]For the derivation of the neo-classical household production theory see Becker's seminal study "A theory of the allocation of time", published in 1965 in The Economic Journal.

[7]By opportunity costs from housework we understand income (from paid work) which a person foregoes when they spend their time on housework instead of paid work.

of the neo-classical method of analysis (e.g., Bergmann, 1995), the concept of the household-benefits function, i.e. the implied household altruism, comes in for much criticism. In contrast to Becker's model – in which the entire household maximises its benefits – the theoretical background of the more recent literature on time allocation is based on the neo-classical viewpoint that each individual within the household maximises his or her own preferences. A household is no longer viewed as a unit, but rather as a place of co-operation and conflicts (Couprie, 2002). The emphasis of this study lies in the simultaneous consideration of the division of income within a household, the individual demand for leisure time, and household production. The criticism of the unitaristic approach exposing only differences between households but not within them leads to the development of a *new collective model* by Chiappori (1988) and Browning, Chiappori (1998).

As was established at the outset, this study seeks to contrast theoretical approaches which chiefly distinguish themselves by the explanatory factors they identify. It is for this reason that the problems of Becker's approach stated above and more recent (more realistic) economic and neo-classical approaches will not be dwelt upon in the following.[8]

Empirical implementation of economic theory

As was previously mentioned, Becker's economic theory, in its original form, only takes account of such variables as define the relative productivity of (married) couples. An essential difference in relation to both of the other explanatory approaches is that in the economic theory the decision between household and other occupations is made simultaneously. The chief determinants in the economic time-allocation theory are (relative) income and assets. The number of children under 16 years of age and the number of persons above 16 years of age in the household are considered to be further explanatory variables. The underlying assumption is that the number of children in a household influence its benefits function. The number of household members increases the marginal benefits from commodities produced in the household such as meals, order etc. (Gramm, 1974). Qualitatively, the same finding would be reached by the assumption that the number of household members increases the marginal productivity of housework. Accordingly, the economic theory is implemented with the help of the following variables:

- potential wages
- partner's income
- assets[9]
- number of children under 16 in household
- number of persons above 16 in household

Potential wages are used in place of real wages in order to detect the labour market productivity via the opportunity costs of housework.[10] The overall effect of the former three variables is

[8]A survey of criticisms and developments of Becker's model can be found, int. al., in Beblo (2001), Ott (1998) or Pollack (2002).

[9]Depicted by the variables 'Income from rent' and 'Investments'

[10]Were real wages to be used at this juncture there would be no allowance made – as Becker demands – for the potential productivity of persons in the labour market. Potential wages comprise important factors influencing productivity such as education etc..

dependent on the signs and magnitude of the direct and indirect substitution effects and of the income effect. The reason for the indeterminancy of these variables may be described using the following example of wages: assuming that the commodities (e.g. clean laundry) produced in the household are normal,[11] an increase in wages will, as a consequence, lead to an increased demand for these commodities (income effect). Thus, it is conceivable that, e.g., financially better-off households can and would want to spend more money on laundry. This effect is negative for inferior[12] commodities. An increase in wages, however, also causes an increase in the production costs of commodities produced in the household, for it implies a rise in opportunity costs where the time spent on paid work has to be reduced in order to produce the commodities. This effect, in turn, diminishes the demand for commodities produced in the household and is called substitution effect. For a more complete description see Gramm (1974).

It is assumed that the presence and number of children within a household influence the relative productivity of (married) partners and the household benefits from household production. Thus, preparation of a meal for 5 or for 6 persons demands only a marginal difference in time, the household benefits [13] from this meal, by contrast, increasing by the benefits which the additional person draws from the meal. Assuming that, due to their socialisation or genetic characteristics, women more than men tend to assume the task of bringing-up children, it is to be expected that this variable is negative for women and positive for men. If, by contrast, synergy effects arise upon the production of the commodities parenting and household commodities, this could have a positive coefficient as a consequence.[14]

This consideration also holds for further adults in the household. Assuming that children or older additional household members increase the marginal benefits of commodities produced in the household, a positive influence is expected of this variable. It is, however, conceivable that, in particular, the influence of persons above 16 years of age is negative, as they may possibly cease to perform their own household tasks and/or less housework may arise in household production as the result of synergy effects

Accordingly, no a-priori assertion can be made concerning the theoretical direction of action of the individual variables.

2.2   Household economic theory of time allocation

The approach detailed in the following section, subsumed under the operative concept of *household-economic theory*, bears a strong resemblance to Becker's theory.[15] Initially, household-economic research tended to be more descriptive, having an empirical alignment. The topic of housework was the subject of research in order to describe, e.g., the economic contribution of housewives to the financial affairs of a household and to society at large. As of the 1970's, a theoretical

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[11]A commodity is deemed to be normal when its demand rises with rising income, the demand elasticity lying between zero and one.

[12]A commodity is deemed to be inferior when its demand decreases with rising income, the demand elasticity being negative.

[13]This holds if the household benefits correspond to the sum of the benefits of the individual household members.

[14]Synergy effects arise as a result of household tasks being attended to simultaneously, e.g., childcare and kitchen work.

[15]Here, household-economic theory is deemed to include the studies by int. al. Reid (1934), Walker (1973) (cf. Godwin (1991)).

grounding of empirical results began to develop. Nickols and Metzen (1978) were among the first household economists to work theoretically, and they drew up three factors influencing the performance of housework: (i) *Pressures*, these factors are understood to be circumstances which necessitate an increase in time expenditure on housework for the entire household. These include, e.g., family size, (small) children, a large property. (ii) *Constraints*, these factors are characteristics which influence a person's own time disposability and that of his or her spouse. Professional status and time spent in employment are mentioned among other things. (iii) *Facilitators* include factors which make housework more efficient for household members or with the help of which a person's own share of housework can be replaced. Family income, education or the use of home helps are to be counted among these factors.

Household-economic research devotes more time and resources than other research fields to the discussion of the various tasks within household production and splits the latter up into component parts (such as cooking, cleaning, etc.). Its closer relation to practice (Godwin, 1991) distinguishes it from purely economic (neo-classical) viewpoints.

Household economists also use fundamental economic variables in their approach, although their effects have a different motive than within the purely economic approach. Thus, a partner's higher income, for instance, is interpreted here as a reduction in the partner's disposable time for household production. In economic theory, by contrast, a partner's higher income is construed as his or her higher efficiency in the labour market and, consequently, as higher opportunity costs in household production. The signs of these variables are, however, expected to be the same for both approaches.

Empirical implementation of the household economic theory

Here, the theory of Nickols and Metzen (1978) should be adhered to, as this was a seminal study. The conceptional categorisation of influencing factors they presented is implemented with help of the following variables:

    (i) Pressures:
   - size of household
   - children under 6 years of age in the household
   - amount of living space above 6 sq m

A positive effect on a person's own housework time is expected for these variables. It is thus presumed that, e.g., especially through the presence of small children in the household, additional housework arises (laundry, meals suitable for children, etc.)

    (ii) Constraints:
   - actual working hours per week
   - partner's income
   - income(s)
   - working on Sundays
   - self-employed

- blue-collar worker, clerical employee, civil servant
- partner not in employment
- individual's own state of health

Individual characteristics which restrict the time a person disposes of for housework are expected to have a negative effect on a person's own housework time. It is presumed that, e.g., in the case of poor health, less time can be expended on housework.

(iii) Facilitators:
- school-leaving certificate
- professional qualifications
- age: professional experience
- home help
- microwave, washing machine or dish washer in household
- disposability of motor car

The factors increasing efficiency ought to reduce the time required for the production of household commodities. It is expected that a home help will take on tasks (laundry, cleaning) which would otherwise be tended to by members of the household.

2.3 Sociological theories of time allocation

From sociological quarters the criticism is often aired that economic approaches are poorly equipped to fully deal with aspects such as power, social norms or ideology. It is argued that the strong emphasis on the economic rational choice model coupled with a disregard for affective components is insufficient when it comes to explaining gender-specific differences and discrimination. Within sociology there exist numerous differing theoretical perspectives for explaining gender-specific differences in time allocation. The following represents a short illustration of the reasoning behind some of the more important theories:

Relative Resource Theory (Blood, Wolfe, 1960) and **Relative Resources in Cultural Context** (Rodman, 1967)

This approach seeks to explain the division of power or decision-making competence within a household in respect of the monetary and non-monetary resources of the household members. Each of the partners is at pains to minimise his or her share of the inferiorly regarded housework. In power-driven negotiations the partner prevails who has the greater resources at his or her disposal – as a rule men with their higher income (but also by virtue of education and professional prestige). The gender-specific division of labour comes about by women having a weaker bargaining position than their partner, especially due to their mostly smaller income in the labour market. Rodman extends the approach using the argumentation that the household division of labour is dependant on interactions between relative resources and cultural norms.

Relative Productivity Hypothesis (int. al. Coverman, 1985)
Owing to economic considerations, individual characteristics are assessed in relation to relative resources. The sociological approach, which incorporates economic considerations of individual household member's relative productivity, is termed *Relative Productivity Hypothesis* by Godwin (1991). This approach differs only marginally from the previous one in its empirical application.

Socialization-Ideology Approach (int. al. Condran, Bode, 1982)
This approach studies the influence of socialization and of the individual's attitudes and expectations in relation to his or her own time allocation and gender-specific division of labour. The gender-role approach envisages the division of labour in the household as the result of the partners' normative gender-role orientation. The attitudes range between the poles 'traditional' and 'non-traditional', and are dependant on both socioeconomic status (Condran, Bode, 1982) and on personal views regarding the relationship between men and women (Covermann, 1985). The approach assumes that men and women with a non-traditional orientation will perform more and less housework, respectively.

Time Available Hypotheses (Wheeler, Arvey, 1981) und **Demand Response Capability** (Coverman, 1985)
Both theories relate the supply of labour to the demand for performance of housework. Extent and division of work in the family result from the disposable time remaining, following deduction of time spent in paid work, in relation to *demand* and *response* factors. Demand factors are factors which compel family members to alter a traditional division of labour (e.g. number of children, size of living quarters), and the response capability of the man is measured e.g. by Covermann (1985) using the man's paid work time and his wage. Here, housework is a zero-sum game, meaning that there accumulates a fixed amount of housework to be performed. Accordingly, those tasks which cannot be performed by one family member must be taken on by another. Gender-specific differences in housework are here construed as effects of differences in the extent to which men and women are in paid work. Both approaches strongly resemble the household-economic theory.

Further sociological approaches
Among the other basic approaches to explaining gender-specific division of labour is the *Family Development Approach* (int. al. Wheeler, Arvey, 1981) or the *Dependent Labour Theorie* (Parson, Bales, 1955).

The common focus of all sociological theories is on the relative contributions of the partners, and examines questions such as the balance of power and gender-specific discrimination within a partnership.

The viewpoint of sociologists differs strongly in this respect from both economic approaches, the latter being gender-neutral and relying on the economic rational choice model. [16]

Empirical implementation of the sociological theory

Whilst pointing to a multiplicity of motives, the sociological approaches do, however, at the same time demonstrate an overlapping of factors, which could influence the household division of labour.[17]As the emphasis of the present study lies in its differences to the above theories, all sociological approaches are merged for empirical implementation. Thus, the following variables can be assigned to the approaches mentioned above:

> **Relative resources and productivity:**
> - school-leaving certificate (reference category: no school-leaving certificate)
> - professional qualifications (reference category: no professional qualifications)
> - partner has the higher school-leaving certificate
> - satisfaction with household occupation
> - ratio of own wage to household income

As was stated at the outset, the sociological approach interprets these variables as the balance of power within a relationship. The higher the absolute education is, for instance, and, more especially, the higher the relative education,[18]the less the amount of 'unpleasant' housework which the individual has to perform.

> **Sozialisation und Ideology:**
> - household net income
> - social assistance
> - East German federal states including Berlin
> - size of municipal community
> - Turkish nationals
> - CDU/CSU as political preference[19]
> - CDU/CSU as political preference of partner

It is implied here that e.g. CDU/CSU voters, Turkish nationals and persons in rural areas have more conservative attitudes regarding gender-specific distribution of household activities. Thus, it is to be expected that these variables have a positive influence for women and a negative one for men. For those living in East German federal states it is expected that, due to their historical

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[16]In the economic sciences it is argued to some extent that the incorporation of affective components is, indeed, fundamentally justified in the area of gender issues, but that they are neglected by academic political consultants owing to the resulting over-complication of the models and the irrelevance of the components. In the case of empirical studies, however, this argument is wholly unfounded, since neglect of relevant exogenous variables leads to a distortion of the estimation results (cf., int. al., Greene (2000), p. 334).

[17]The distinction between the individual groups is arbitrary. Thus, education, for example, may also be counted as a member of the group Socialization and Ideology, and is correspondingly interpreted merely according to another backdrop.

[18]I.e. the higher the education in comparison with that of the partner's is (cf. Appendix).

[19]CDU/CSU is the main conservative or center-right party in Germany.

circumstances – with full integration of women into the employment process, in addition to the adequate provision of childcare – household activities are more equally distributed between man and woman.

Time availability, demand and capacity:
- actual working time per week
- actual working time of partner per week
- number of children under 16 in household
- children under 6 years of age in household

These variables should negatively effect the individual housework time of man and woman, respectively.

Life cycle:
- Age
- age of partner

The influence of these variables is initially indeterminate. Thus, age, for example, can be indicative of a more conservative attitude, whilst the variable can also absorb effects of partial retirement etc.. Additionally, control variables can include effects from the areas of time allocation, demand, capacity, socialization and ideology.

In the following section, the economic and sociological theories presented are to be scrutinised. The actual applications of the theories, i.e. the variables deployed, are closely aligned to the influencing factors identified in the metastudy by Godwin (1991).

The incentive of the examination lies above all in the recognition, with the benefit of clearly delineated theories, of important basic tendencies of the influencing factors.

3   Description of data

The socioeconomic panel (SOEP) is, besides the microcensus, the most important regular survey of individual personal data in Germany. In the survey year 2000, the random sample comprised some 12.000 households and included more than 24.000 persons.

For the review of the three previously mentioned research perspectives on the household division of labour, cross-section data from SOEP questionnaires relating to households, persons, and children from the year 2000 is employed.[20]

The dependant variable "Time allocated to household activities"[21] the exogenous variables used for the estimate along with their specification and abbreviated name are detailed in the Appendix.

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[20]C.f. http://www.diw.de/deutsch/sop/service/fragen/index.html, 24.03.2005.

[21]As will subsequently be demonstrated, the dependant variable is composed of the average time expenditure per day for both housework and errands.

3.1 Choice of sample

The present study examines the explanations provided by various theoretical approaches to individual time allocation. As the emphasis is on gender-specific differences in individual time allocation for housework within a household, a certain pre-selection of the observations is required. Thus, certain groups of persons not addressed by the problem can be excluded from the outset. Additionally, several observations must be excluded from the sample because of missing or unrealistic responses. The exclusion criteria influence three categories of characteristic: The type of household, the school-leaving certificate and the sum of the time-allocation responses

Types of household
This subject can only be examined in the case of household structures in which the housework arising can be distributed among several persons. Thus, the decisive factor is the presence of at least two (adult) persons in a household. The observation excludes one-person households, single-parent families (common work which arises cannot be equivalently handed on to an 'equal' partner) and households comprised of sundry combinations, since the latter include, for instance, apartment-sharing cohabitation in which each person attends to his or her own household chores. Accordingly, single-person households – of which it is assumed that they, even with a partner, do not fulfil the concept of family – are excluded, as are households with sundry combinations such as apartment-sharing which again does not count as a family in the traditional sense.

School-leaving certificate
The relative education of partners is illustrated by their educational differences. In order to devise the educational differences between the partners, a ranking order of educational levels has to be established. To this effect, the customary number of years at school was implied for the possible school-leaving certificate.[22] In this hierarchy, 'other certificate' and present schooling cannot be accounted for. Persons or their partners with a certificate[23] other than those specified, or who are presently at school, are not taken account of in the sample.

Sum of the time allocation variables
Observations which indicated a sum of all time allocation data[24] beyond a realistic value have not been taken into consideration. The limit for 'unrealistic' figures was set at 20 hours per working day, i.e. only those persons who are active for precisely 20 hours or less per day are to be found in the sample.[25]

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[22]See variable list in Item 6.

[23]Those having neither 'Abitur' nor a school-leaving certificate from Fachschule, Realschule or Hauptschule. There are no oberservations with 'no school-leaving certificate in the sample. A more detailed description of this variable can be found in the appendix.

[24]The exact question regarding time allocation posed in the SOEP survey reads: "What does your normal everyday routine look like" Seven categories are surveyed: occupation and vocational training (times include journey to work, spare-time jobs), errands (groceries, purchasing, visits to public authorities), housework (laundry, cooking, cleaning) childcare, further education and additional job training as well as learning (including schooling and degree studies), maintenance (house and home, car, gardening) and hobbies in addition to other leisure time activities.

[25]This exemption criterion reduces the number of observations in the case of men by 117 (approx. 3%) and in the case of women by 339 (approx. 7%).

3.2 Descriptive Approach

This section seeks to illustrate the variables presented in Item 6 of the Appendix. In Table 1, the averages for dichotomous variables are set out, as are the standard deviations of the variables deployed for women and men in the year 2000, and, additionally, the medians for continuous variables. The observations for individual persons are incorporated into the analysis on a weighted basis.[26]

Table 1: Descriptive Statistics on Time Allocation

	Men			Women		
	Mean value	Spread	Median	Mean value	Spread	Median
Variables for time use (TU)						
TU Profession	5,71	4,93	8	3,27	4,03	0
TU Housework	0,81	0,97	1	1,32	0,73	1
TU Childcare	0,44	1,01	0	3,18	1,77	3
TU Shopping	0,87	0,79	1	1,26	2,69	0
TU Further education/job training	0,22	0,83	0	0,16	0,73	0
TU Maintenance	1,42	1,39	1	0,73	0,92	0
TU Hobbies	2,32	2,06	2	2,12	1,82	2
Sum	11,78	4,13	13	12,04	3,81	12
TU Housework as regressand[a]	1,68	1,48	2	4,51	2,04	4
Regressors						
Income	2198,33	2311,17	2200	825,38	1159,6	0
Income of partner	848,23	1163,37	0	2224,7	2346,5	2200
Household income	4817,94	2331,04	4400	4789,6	2334,4	4330
Ratio of income	0,40	0,37	0,49	0,16	0,22	0
Potential hourly wage	24,82	7,19	24,61	11,53	2,73	11,56
Working hours	26,23	23,00	38,50	14,41	18,02	0
Partner: Working hours	14,67	18,01	0	26,36	23,08	38,50
Difference in education	0,20	1,39	0	-0,19	1,37	0
Living space	4,27	1,68	4	4,25	1,61	4
Size of household	2,78	1,04	2	2,74	1,02	2
Persons over 16	2,28	0,61	2	2,28	0,62	2
Number of children	0,50	0,88	0	0,46	0,84	0
Age	52,48	15,39	52	50,43	15,08	50
Age of partner	49,89	15,25	49	52,94	15,14	53
Contentment housework	6,46	2,24	7	6,8	1,94	7
Contentment health	6,54	2,24	7	6,54	2,22	7
Partner: Contentment Health	6,61	2,20	7	6,5	2,22	7
Dichotomous Variables						
Social assistance	0,01	0,08		0,01	0,08	
Income from rent	0,12	0,32		0,12	0,33	

continued overleaf

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[26]A personal weighting factor allocated by SOEP is used here.

Table 1: Descriptive Statistics on Time Allocation

	Men			Women		
	Mean value	Spread	Median	Mean value	Spread	Median
Assets of 5.000 to 10.000	0,05	0,21		0,04	0,2	
Assets of over 10.000	0,04	0,19		0,04	0,19	
Partner: unemployed	0,53	0,50		0,41	0,49	
Sunday	0,10	0,31		0,06	0,24	
Self-employed	0,05	0,23		0,03	0,16	
Menial work	0,08	0,28		0,17	0,37	
School-leaving certificate 'Hauptschule'	0,50	0,50		0,50	0,50	
School-leaving certificate 'Realschule'	0,25	0,43		0,34	0,47	
School-leaving certificate 'Fachoberschule'	0,06	0,23		0,03	0,16	
School-leaving certificate 'Abitur'	0,19	0,39		0,13	0,34	
Professional qualification 'Lehre'	0,47	0,50		0,45	0,5	
Professional qualification 'Fachhochschule'	0,21	0,41		0,19	0,4	
Professional qualification 'Universität'	0,20	0,40		0,10	0,30	
Children under 6 years	0,15	0,35		0,12	0,32	
Aged up to 20	0,00	0,02		0	0,05	
Aged between 21 and 30	0,07	0,25		0,1	0,3	
Aged between 31 and 40	0,21	0,41		0,2	0,4	
Aged between 41 and 50	0,19	0,39		0,2	0,4	
Aged between 51 and 60	0,19	0,39		0,19	0,4	
Aged over 60	0,35	0,48		0,3	0,46	
Turkey	0,01	0,08		0,01	0,08	
East Germany	0,24	0,43		0,24	0,43	
up to 20.000	0,45	0,50		0,45	0,5	
between 20.000 and 100.000	0,26	0,44		0,26	0,44	
between 100.000 and 500.000	0,18	0,38		0,18	0,38	
CDU/CSU	0,23	0,42		0,19	0,39	
Partner: CDU/CSU	0,19	0,39		0,23	0,42	
Home help	0,07	0,26		0,07	0,26	
Microwave	0,66	0,47		0,66	0,48	
Dishwasher	0,67	0,47		0,67	0,47	
Washing machine	0,97	0,17		0,97	0,17	
Motor-car	0,90	0,30		0,76	0,43	
Discontentment housework	0,03	0,17		0,02	0,15	
Discontentment health	0,05	0,22		0,05	0,22	
Partner: Discontentment health	0,05	0,22		0,05	0,22	
Number of observations	4590			4542		

[a]time allocation variable consisting of TU housework and TU errands

Examination of the descriptive statistics shows that the sample used is not representative of the German nation-wide average, owing to its exemption criteria (e.g. choice of household type,

etc.). Thus, the share of persons of Turkish nationality is somewhat under-represented at 1%, the nation-wide average being 2.43% in the year 2000.[27] This is presumably due to persons with sundry school-leaving certificates, under which most foreign school-leaving certificates are subsumed, not being included in the sample. Older people (and, correspondingly, the unemployed are also under-represented, their share amounting to 35% and 30%, respectively.

A summary comparison of the descriptive statistics shows marked differences in time allocation between men and women in the areas of housework and paid work.[28] The descriptive analysis of gender-specific time allocation and contentment regarding housework provides the following picture:[29]

The men in the sample spend on average 5 hours and 43 minutes on occupation, job-training or spare-time job. In the case of women there is a somewhat different picture: They work for an average of 3 hours and 16 minutes each working day.

Pure housework activities (without errands) form on average just under 49 minutes of the working day of men, and 3 hours and 11 minutes of women's working day. Accordingly, in partnerships, women attend to considerably more housework on average than men.

When considering the variable 'Time allocation for housework and errands', used below as a regressor, it can be ascertained that men spend on average 1 hour and 41 minutes on the latter, the average in the case of women being 4 hours and 30 minutes.

4 Empirical application of the theories

4.1 Endogenous variables and methodic procedure

The variable under discussion, 'Housework', is composed of the time allocation variables for housework and errands. Maintenance does not form part of this variable, as it borders on hobby activities – especially in the areas of gardening and car maintenance – in a way which is not clearly definable. In addition, the time for childcare remains unconsidered, as the analysis confines itself to classical housework including errands and upkeep of the household. The values of the endogenous variables are censored on the left (0) and truncated on the right (20), as a negative time indication is excluded, and values with an indication larger than 20 hours are exempted from the sample for the above reasons. The standard method for the presentation of censored variables is a maximum likelihood estimation of the Tobit model (Greene, 2000, p. 896 et sqq.). It is, of course, possible to circumvent the censoring problem by a transformation of the endogenous variables into a constant variable. This transformation allows the application of a simple OLS regression (Ordinary Least Squares) with all of its attendant advantages. In comparison to the Tobit method, an OLS estimation distinguishes itself by robustness as the assumptions necessary for consistent estimators are much less restrictive.

Assuming that each person also requires at least four hours sleep on weekdays, an active day is – as was previously stated – deemed to consist of 20 hours. The value of housework is

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[27]Cf. Population statistics of the Statistisches Bundesamt, 2004.

[28]For reasons of completeness the remaining time-allocations surveyed in the SOEP are presented.

[29]To facilitate comprehension, the data in the text is given in minutes (using decimal points).

proportionately based on these 20 hours of an active day (P_{TU}). Subsequently, the censored proportion determined is changed by the transformation[30] $ln\frac{P_{TU}}{1-P_{TU}}$ into a constant variable.

4.2 Generated variables: potential earnings

Economic theory, according to Becker, demands special consideration of a person's productivity in the labour market. For unemployed women and men or for persons who made no mention of their earnings, the potential productivity is determined by the estimated hourly earnings. A wage function is estimated using the two-stage Heckman procedure (Heckman, 1979) for women and men separately. In the first step, the participation of women and men in the labour market is corrected by the estimation of a correction factor lambda.[31] In a second step, the observable wage rates[32] of working women and men are regressed to school and vocational training, with age as indicator for labour market experience (nonlinear), in addition to the correction factor lambda calculated in the first step, which controls for a possible selectivity of the group of employed women and men.

4.3 Results of the model specifications

Table 2 contains the results of the empirical analysis. The marginal effects of individual regressors (in addition to the elasticities for constant variables) are presented in Table 7.

Table 2: Results of the economic and sociological theories

TU Housework as regressand Regressors	Economic theory Men		Women		Household-economic theory Men		Women		Sociological theory Men		Women	
Income					(-)		(-)	***				
Income of partner					(+)	***	(+)					
Household income									(+)	**	(-)	
Ratio of income									(+)		(-)	***
Potential hourly wage	(+)	**	(-)	***								
Pot. hourly wage of partner	(-)		(+)	***								
Social assistance									(+)		(+)	
Income from rent	(-)	***	(+)									
Assets 5.000 bis 10.000	(-)		(-)									
Assets over 10.000	(-)		(-)	**								
Working hours					(-)	***	(-)	***	(-)	***	(-)	***
Partner: Working hours									(+)	***	(+)	**
Partner: Unemployed					(-)		(-)	*				
Sunday					(+)	***	(+)					
Self-employed					(-)	***	(+)					
Menial work					(+)	*	(+)					

continued overleaf

[30]Observations whose transformed variables are not defined ($P_{TU} = 0$) are fixed at an infinitesimal value of greater zero.

[31]The correction factor is estimated using school and vocational training, age (simple and squared), the presence of children of up to three years, and a variable which assumes the value one if the person is married.

[32]Wage rates are derived from the net earnings of the last month and the actual weekly working time.

Table 2: Results of the economic and sociological theories

TU Housework as regressand / Regressors	Economic theory Men		Economic theory Women		Household-economic theory Men		Household-economic theory Women		Sociological theory Men		Sociological theory Women	
School-leaving certificate 'Realschule'					(+)	***	(-)	*	(+)	**	(-)	*
School-leaving certificate 'Fachoberschule'					(+)	*	(-)	***	(+)	*	(-)	**
School-leaving certificate 'Abitur'					(+)		(-)	**	(+)		(-)	**
Difference in education									(-)		(+)	
Professional qualification 'Lehre'					(-)		(-)		(-)		(-)	
Professional qualification 'Fachhochschule'					(+)		(-)		(+)		(-)	
Professional qualification 'Universität'					(+)		(-)		(-)		(-)	
Living quarters					(-)	**	(+)	**				
Size of household					(-)	***	(+)	***				
Persons over 16	(-)	***	(+)	***								
Number of children	(-)	***	(+)	***					(-)	***	(+)	***
Children under 6					(+)	*	(-)		(+)	***	(-)	***
Age					(+)	*	(+)	***	(+)		(+)	***
Age*Age					(-)	***	(-)	***	(-)	*	(-)	***
Age of partner									(+)		(-)	
Turkey									(-)	**	(+)	
East Germany									(+)	***	(+)	*
up to 20.000									(-)		(+)	
20.000 to 100.000									(+)		(+)	
100.000 to 500.000									(+)		(-)	
CDU/CSU									(-)	**	(+)	
Partner: CDU/CSU									(-)	***	(+)	***
Home help					(+)		(-)	***				
Microwave					(+)	***	(-)					
Dishwasher					(-)	***	(-)					
Washing machine					(+)		(+)	***				
Motor-car					(+)	**	(+)					
Discontentment housework									(-)	***	(-)	***
Discontentment health					(-)	***	(-)	***				
Partner: Discontentment health					(+)	***	(+)					
Number of observations	4590		4542		4590		4542		4590		4542	
Adj. R-squared	0,06		0,03		0,19		0,13		0,17		0,11	

The significances indicated by stars refer to the customary levels of 90% (*), 95% (**) and 99% (***)

The coefficients of the different model specifications are not directly interpretable because of the transformation of the endogenous variables. Initially, only conclusions regarding the direction

of the effects of the regressors and their significance can be made. Quantitative conclusions on the magnitude of regressors are possible only after the marginal effects are calculated. The marginal effects and elasticities calculated for the above estimates are to be found in Table 7 of the Appendix. As was the case with the descriptive analysis, the data on marginal effects is converted to minutes in the following presentation of results.

4.3.1 Results of the economic model specification

The determinants of the Becker model do not always correspond to the predictions of the underlying economic theory.

For women, the individual potential hourly wage has a negative effect on the proportion of the (active) day spent on housework. According to the economic theory, this is indicative of the fact that for women the direct substitution effect is dominant and the income effect is negative or smaller than the direct substitution effect. In the case of men, by contrast, the individual wage – or the individual opportunity costs of housework – has a significant positive influence on the time spent on housework. An interpretation based on the arguments in section 2.1 1 implies here that in the case of men the income effect is positive and exceeds the substitution effect of these opportunity costs. The estimation results could, however, suggest that there are considerable gender-specific differences between various household activities (cooking, washing, clearing the table etc.). Thus, it is possible that household chores undertaken by women are substitutable, whilst men tend to perform activities which are more difficult to 'outsource'. Table 7 shows the gender-specific elasticities of housework time, which amount in the case of a 1% increase in potential wages to 2,08% (men) and -1,32% (women).

The partner's wages also display a different effect for both sexes. Whilst it plays no role for the housework time of men how productive their partner is in the labour market, women react to the opportunity costs of their partner with increased housework time. It would seem that the housework time of the (married) partner has a substitutive effect in the case of women. Due to the partner's higher wages, the price for his housework time is increased, a circumstance which meets with additional housework on the part of his partner. The insignificance of these variables for men could, by contrast, mean the additional income of the partner being used to obtain commodities from outside household production (e.g., by employing a home-help).

The indicators for the wealth of a household differ in their effects for man and woman. Accordingly, the presence of rent income has a significant negative influence on the housework time of men, whilst the coefficient of this variable is insignificant in the case of women. This could be an indication of the fact that commodities produced in the household are in fact normal commodities, the income effect differing, by contrast, for man and women. The assumption implies that women with greater wealth take care of the increased demand for commodities produced in the household themselves, whilst men have these commodities produced (by their partner or from outside the household). The two dummy variables for assets have negligible influence on the time spent on housework. A significant negative coefficient is displayed only in the case of women with assets over 10.000 DM.

The number of children under 16 years in the household has a significantly negative effect on housework time for men, this being significantly positive for women. The positive coefficient for

women implies that the amount of time spent on housework rises with the number of children, the exact amount being 42 minutes per child (cf. Table 7). For men, by contrast, the opposite is the case, the time spent by them on housework being reduced by some 1.25 minutes. Evidently, the presence of children leads to both partners concentrating on their core competence. The number of persons over 16 years in the household has the same (significant) effect in the case of both man and woman as the number of children under 16.

4.3.2   Results of the household-economic model specification

The empirical results of household-economic model specifications do not always actually correspond to theoretical considerations. Variables subsumed under the concept *Pressures* represent factors which demand an increased housework time. The previous variables show a contrary behaviour for men and women. Whilst the number of persons in the household and the size of living-space have a positive effects on the housework time of women, men seem not only to ignore the resulting increase in demand for housework, but even reduce their own housework time. It would also be plausible that men feel more inclined to satisfy the resulting financial demands and invest more time in paid work. By contrast, children under six years of age increase the time spent on the household by men by roughly a half hour. It would appear as though the man counterbalanced the additional housework required by the presence of small children. For women, by contrast, this variable displays no significant influence.

The group Constraints contains characteristics which influence the individual disposable time as well as that of the (married) partner. These include e.g. the individual's state of health and that of the partner. Both of these variables have the same directional effect for both men and women and decrease or increase the individual's performance in the household, whereby a partner's poor health does not lead to an increase in women's own housework time. The individual employment time decreases the time spent on housework for both sexes. The influence is however, hardly measurable, each additional working hour reducing a woman's housework time by approx. 2 minutes and a man's by approx. 8 minutes. The fact that the partner is unemployed shortens housework time only in the case of women. For men this coefficient is not significant. Individual income is negatively significant only in the case of women. The partner's income, by contrast, has a significant positive influence for men only, a 1% increase in wages leading to a 37% increase in the man's housework time. Additionally, professional demands have a significant influence on men's housework time. Menial workers, office employees and civil servants have seemingly more time to spare for housework, and it can also be shown that it is especially the self-employed who attend to significantly less work in the home, the time for the latter amounting to a good hour.

Household-economic theory acts on the assumption of a negative relation between housework and facilitators. When examined empirically, it can be shown that the influence of these facilitators is not always compatible with the theory. Thus, for both sexes the variable 'Age' exhibits a degressively increasing influence on the endogenous variable. The coefficient for home-help is, by contrast, – at least where women are concerned – as expected significantly negative. A home-help reduces a woman's housework time by over a half hour. The education variables display gender-specific effects. Whilst a school-leaving certificate from a Realschule or Fachoberschule

as opposed to a Hauptschule[33] is more likely to have a positive effect for men on their own housework time, women with higher school-leaving certificates tend to be less active in the household. A man with the certificate Abitur, by contrast, does not perform significantly more work in the household than a man in the reference category. The presence of technical equipment in the household, which ought to ease and reduce housework, also displays results which are in part incompatible with the theory. In keeping with this, the presence of a washing machine increases the proportion of the day which a woman spends on housework. Indeed, it could be inferred that in Germany a washing machine has come to be standard household equipment. Thus, it is self-evident that the dummy-variable 'washing machine' measures a person's other unobservable individual characteristics.

4.3.3 Results of the sociological model specification

The sociological approach provides – in terms of the corrected R-squared – an explanatory content qualitatively similar to that of the household economic one. The determinants of the (relative) resources or productivity of a (married) partner show only a partly significant influence on the amount of activity in the household.

Thus, men with e.g. a school-leaving certificate from a Realschule or with Fachabitur spend more time on housework than men with a certificate from a Hauptschule or with Abitur. This result is only partly compatible with the theory of relative resources. Higher school-leaving certificates seem to change even the traditional behavioural patterns of men to the effect that they are prepared to take on more housework. Since the interpretation of these variables for women leads to the same directional effects both from the ideological and the Relative Resources perspective, no discrimination may be made between both channels of influence. A difference in education has, by contrast, no effect on the time for housework. Relative education also fails to have the expected negative effect. The point of departure of the sociological approach assumes that the partner with the higher school-leaving certificate exercises the greater power within a partnership. The corresponding conclusion envisages that the *more powerful* partner tends to foist housework, considered to be inferior, upon the other partner. In contrast to the economists, sociologists thus interpret this coefficient using power aspects as opposed to comparative advantages in the labour market.

Variables which primarily measure the influence of socialization and a person's own attitude or that of the partner indicate a significant influence on individual time allocation. It can be shown that the socialization-ideology approach with its attendant assumption of the connection between traditional orientation and housework can be confirmed. Accordingly, men who are staunch CDU/CSU voters or whose (female) partners are staunch CDU/CSU voters work significantly less in the household. In the case of women it is only the political preference or their partner's conservative attitude which is significantly positive. A woman whose partner is a staunch CDU/CSU voter spends some 28 minutes more per day on housework than others. There would also appear to be significant differences between East and West German households. Accordingly, East German women spend approx. 17 minutes more on housework per day

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[33]The education variable 'school-leaving certificate Hauptschule' is not included in the reference category of the education variables.

that persons in West Germany, this figure even amounting to 50 minutes more in the case of East German men. Of all control variables which can be assigned to the socialization-ideology approach the dummy variable 'Turkish citizenship' has the quantitatively strongest influence on the time allocation of men. Correspondingly, Turkish men join in housework activities for around two hours and 40 minutes less than their gender counterparts of other nationalities.[34] If it is assumed that Turkish households tend to be traditionally oriented, this result concurs with sociological theories. There seems, by contrast, to be no significant differences in time allocation between urban and rural populations.

In addition, variables governing time disposability or demand for housework have a significant influence for both sexes. Thus, the time for paid work has a significant influence, whereas the time which the partner musters for paid work has a significant positive influence. Children exert different influences on men and women. Accordingly, the specialisation between the (married) partners seems to increase with the number of children in the household or the female partner is, despite the increased demand for housework, given less support by the man for other reasons. An additional child in the household increases the man's housework time by a full 49 minutes, whilst the woman's time is increased by some 32 minutes. The fact that children under 6 years live in the household has, by contrast, a positive effect on men, who then work a good half hour longer (53 minutes) in the household. This would indicate that men have to make allowance for increased demand for housework or that redistribution takes place owing to their female partner's reduced time capacity due to childcare. Men are seemingly unwilling to meet this demand where older children are concerned. With women, by contrast, it is more the availability of time which seems to be important, children under 6 years reducing a woman's housework time by 40 minutes.

The age variables considered from the viewpoint Phase in Life Cycle have, especially in the case of women, a significant influence on housework time. The proportion of the day which women spend on housework increases degressively with age. The household activity of men also decreases degressively. The partner's age is insignificant for both sexes.

4.4 Appraisal of Results

It has been shown that the decisive factors in all three theoretical approaches have a significant influence on the time which men and women spend on housework. It is for this reason also that none of the approaches can be deemed to be fundamentally incorrect. It is, however, noticeable, that the household-economic and the sociological approach show a considerably better fit (corrected R-squared). The smaller share of explained variance is used e.g. by Covermann (1985) as a criticism of the economic approach and could be an argument in favour of the other two approaches. It should, however, be taken into account that in this instance a very narrow interpretation of the original neoclassical modelling is rendered. The usual incorporation of numerous so-called *control variables* such as age has been disposed of, as these have gained explicit entrance to the competing theories of sociology and household economics. Variables such as time in employment and the number and age of children were found in previous studies to have

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[34]The reference category contains all persons who do not possess the Turkish nationality. It is composed primarily of German nationals (98%).

a consistently robust effect on housework, a finding which this study can confirm. It should, however, be noted that these child-related variables have, in this instance, a negative effect on women's housework time (Godwin, 1991) as opposed to other studies. This could be due to the fact that the SOEP samples the time allocated to childcare separately. Furthermore, by comparison to many other empirical studies the results fail show that variability of housework time can be better explained for men than for women (Godwin, 1991).

The criticism by Covermann (1985) cited above was seen as a motive for closer examination of which of the three approaches is best suited to explaining individual housework time. For this purpose the Davidson/MacKinnon (1993, p. 381et sqq.) specification test for non-nested models was deployed. By means of this test it can be statistically surveyed to what extent one model is to be preferred to another. To this end the specifications with an additional regressor, i.e. the fit of the specifications under scrutiny, are estimated. The fit of the economic specifications, for example, is incorporated into the household-economic specification as an additional regressor. Where a significance of this regressor is detected, the examined specification (in the example the household-economic one) is inferior to the estimate generated by the fit (in the example the economic one).

The results of this test (t-values of the additional regressor) are presented in Table 3. The entire fit-variables are highly significant. Thus, the test clearly demonstrates that in order to satisfactorily explain housework, better empirical models must be developed (Davidson, MacKinnon, 1993, p. 383). The result further shows that Becker's approach, despite its comparatively low coefficient of determination, does not perform any worse than the other two approaches. As none of the approaches distinguishes itself as *the best*, the economic theory, heavily criticised because of its limited focus on wage rates and incomes, cannot be judged to be inferior to the other models in explaining the household division of labour.

Table 3: Davidson/MacKinnon Test

		Economists		Household economists		Sociologists	
		Men	Women	Men	Women	Men	Women
Economists	Men			27,04***[35]		24,98***	
	Women				24,42***		21,84***
Household economists	Men	4,48***				8,47***	
	Women		2,36**				5,78***
Sociologists	Men	5,22***		13,24***			
	Women		2,51**		12,34***		

Besides the theoretical shortcomings mentioned above, the applications of the theories also indicate estimation problems due to violations of the Gauss-Markov assumptions. Numerous variables used in household-economic and sociological theory should be treated with caution on account of their possible dependence on individual housework time. The time allocation for other activities such as employment is especially problematic. Here, Becker's assumption based on simultaneity of decisions concerning housework and paid work seems to be realistic.

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[35]Reading example: The fit of the household-economic model specification for men has a t-value of 27.04 as regressor in the economic model specification, and is thus significant. This signifies that the economic model specification is not to be preferred to the household economic specification.

5 Empirical integration of theoretical approaches to time allocation

The previous results show that none of the three theories – applied to the women and men of the sample – can make a satisfactory conclusion concerning the household division of labour. It would appear as though both economic and sociological factors had a significant influence on time allocation within a household. As none of the theories is superior and variables of differing approaches have a significant influence on housework, it seems reasonable to integrate the approaches despite the reservations of Stigler and Becker (1977). This conclusion was reached by even earlier studies (vid., e.g., Farkas, 1976). The household division of labour cannot continue to singularly view only time allocation for housework, but has to simultaneously consider paid work in particular. From an econometric angle this can be achieved with the aid of a Seemingly Unrelated Regression (SUR) model (Greene, 2000). Accordingly, the above approaches will be integrated in the following section and allowance will be made for the interdependence between paid work and housework time.

Owing to the potential dependence on housework and other time allocations, the time allocations for housework and occupation below are to be simultaneously estimated using a SUR model. The estimate model facilitates a more efficient consideration by consideration of a possible correlation of latent explanatory factors of housework and occupation. This leads statistically – compared to the OLS method – to a decreased variance of the estimate coefficients.

5.1 Methodical aspects and estimation results

In order to avoid a selection distortion by unemployed persons in the employment equation, a Heckman correction is initially implemented. To this end, a Probit model is estimated which, separately according to gender, registers the decision to participate in the labour market.[36] The resulting correction factor is incorporated into the second equation of the SUR model as an explanatory variable.

The mutual introduction of employment time and housework time, respectively, as a regressor in the time allocation equation was considered in this context. However, owing to the potential endogonity between various kinds of time allocation an instrumentation of both of these variables would be appropriate (Greene, 2002, p. 370 et. sqq.). Appropriate instruments are, in this context, variables which do indeed strongly correlate with employment time or housework time, although not with the other respective time allocation variable. Due to the considerable practical difficulties connected with the generation of a suitable instrument estimator, however, this was abandoned. To facilitate potential distortions due to non-consideration of important explanatory variables an estimate with the above regressors is conducted. It is shown that the estimation results are quite robust vis-à-vis the respective introduction of the regressors 'paid work time' and 'housework time'. Accordingly, the majority of the remaining regressors remain unchanged regarding their significance and directional effect. [37]

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[36]The labour market decision is explained by the variables: Partner's income, Vocational training, School-leaving certificate Fachschule, University-entrance certificate, Age cohorts, Children under 6 years, and Number of children.

[37]Differences to the model specification without reference to the regressors 'employment time' and 'housework

Table 4 presents the estimation results of the SUR estimates. The model specification below contains the determinants of individual time allocation derived from the theoretical approaches. All possible explanations derived from the section on empirical application of the three theories were initially incorporated into the integrative estimate equations. Subsequently, those regressors were removed from the specification which proved to be significant for neither men nor women. The following table presents only those exogenous variables which are significant in the case of at least one of the sexes[38]

Table 4: Results of the integrative model specification

Regressors	Men		Women	
TU Housework as regressand				
Household income	(-)		(-)	***
Income of partner	(+)		(+)	*
Ratio of income	(-)	***	(-)	***
Income from rent	(-)	***	(+)	
Partner: Working hours	(+)		(+)	
Sunday	(+)	***	(-)	
Self-employed	(-)	***	(-)	
School-leaving certificate 'Realschule'	(+)	*	(-)	***
School-leaving certificate 'Fachoberschule'	(+)	*	(-)	***
School-leaving certificate 'Abitur'	(+)		(-)	***
Persons over 16 years	(-)	***	(+)	**
Number of children	(-)	***	(+)	***
Children undrer 6	(+)	***	(-)	*
Aged up to 20	(-)		(-)	**
Aged between 21 and 30	(-)		(-)	***
Aged between 31 and 40	(-)		(-)	***
Aged between 41 and 50	(-)		(-)	**
Age of partner	(-)		(-)	**
East Germany	(+)	***	(+)	
up to 20.000	(-)	***	(+)	**
CDU/CSU	(-)	*	(+)	
Partner: CDU/CSU	(-)	**	(+)	**
Home help	(+)		(-)	***
Microwave	(+)	**	(-)	
Washing machine	(-)		(+)	***
Motor-car	(+)	***	(+)	
Discontentment housework	(-)	***	(-)	***
Discontentment health	(-)	***	(-)	***
Partner: Discontentment health	(+)	***	(+)	
Number of observations	4590		4542	
continued overleaf				

time' result primarily for the housework equation for men.

[38]The regressor 'Partner: Working time' is an exception and is, despite its insignificance, incorporated into the model specification in order to separate the level of the partner's (monthly) earnings and the employment time required for the latter.

Table 4: Results of the integrative model specification

Regressors	Men		Women	
Adj. R-squared	0,17		0,13	

TU Paid work as endogenous variable

	Men		Women	
Income of partner	(+)	***	(-)	**
Household income	(+)	***	(+)	***
Ratio of income	(+)	***	(+)	***
Assets between 5.000 and 10.000	(-)		(-)	*
Assets over 10.000	(+)		(-)	***
Partner: Working hours	(+)	***	(+)	***
Self-employed	(+)	***	(+)	***
Menial work	(+)	***	(+)	***
School-leaving certificate 'Realschule'	(+)		(+)	***
School-leaving certificate 'Fachoberschule'	(-)		(+)	***
School-leaving certificate 'Abitur'	(+)		(+)	
Professional qualification 'Universität'	(-)	***	(-)	
Persons over 16	(+)	***	(+)	
Children under 6 years	(-)		(-)	***
Living quarters	(+)	**	(+)	***
Aged up to 20	(-)		(+)	***
Aged between 21 and 30	(+)	***	(+)	***
Aged between 31 and 40	(+)	***	(+)	***
Aged between 41 and 50	(+)	**	(+)	***
Age of partner	(-)	**	(+)	
Turkey	(-)	**	(-)	***
East Germany	(+)	***	(+)	
Dishwasher	(-)		(+)	**
Washing machine	(+)	***	(+)	***
Discontentment Housework	(-)	**	(+)	**
Discontentment Health	(-)	***	(-)	***
Partner: Discontentment Health	(+)	***	(+)	*
Selection factor	(-)	***	(-)	***
Number of observations	4590		4542	
Adj. R-squared	0,89		0,80	

The results of the integrative estimate model differ only negligibly from the results of the theoretically motivated model specification. The significance for both sexes change in the case of only four explanatory variables, a further four proving to be significant for only men or women. Additionally, certain variables lose their significance and are thus not incorporated into the integrative approach. These include e.g. the two dummy variables 'Partner: Unemployed' or 'Turkey'.

Household income becomes significantly negative for the woman in the integrative estimation model compared to the sociological specification, having, however, no influence whatsoever on the man's housework time. In addition, the partner's income has no further influence on men's housework time in the integrative estimate. However, the share of income for men now becomes – in comparison with the sociological model specification – negatively significant. This result verifies the hypotheses of the Relative Resource Theory. For women, by contrast, the partner's income now has – contrary to the household-economic specification – a significantly positive coefficient. The partner's workload, which is negatively significant for both sexes in the socio-logical approach, becomes insignificant in the integrative approach. Contrary to the sociological approach, the integrative specification does, however, take account of the partner's monthly income. It could be the case that the effect of the partner's paid work time correspondingly disappears. The results tend to show that the allocation of housework is chiefly determined by the division of income between the partners and less due to the absolute income level of a household (household income). This applies independently of the partner's time disposability.

The dummy variable for 'Communities of up to 20.000 inhabitants' also becomes significant for both sexes. It can now also be seen that in more rural areas men assign significantly less, and women significantly more time to housework. Contrary to the results of the sociological model specification, this result confirms the assumption of the socialization-ideology approach. When children under six years of age live in the household, this has a significantly negative effect of the woman's housework time contrary to the household-economic specification. Consequently, the integrative specification confirms the result of the sociological model specification, the latter also detecting a housework-reducing effect of small children. Analogously, the significance of the partner's age also changes for women. Women work less in the household the older their partner is. Contrary to the sociological specification, women living in the former GDR states do not perform more work in the household than their counterparts in former West Germany.

As was initially discussed, the results of the integrative model specification are to be preferred from a statistical point of view, as this approach takes account of interdependencies between employment time and housework time, thus allowing a more efficient estimate. Besides the improved reliability of the estimate coefficients, the above model specification should also present fewer problems due to the *omitted variable bias*.

5.2   Sensitivity analysis

The majority of the regressors deployed also retain their directional effects and significance in the integrative model specification. Individual variables, however, do not prove to be robust compared to the theoretically motivated estimate equations. It is for this reason that the integrative estimation is repeated using various sub-samples to obtain further indications of the estimate model's robustness. The sub-samples considered below deal with a differentiated examination of (i) various age groups as well as (ii) the employment time of the persons surveyed. As stated at the outset, the sample surveyed is again not representative of Germany as a whole. Especially where the aged are concerned, substitution effects between paid work and housework are given to a lesser degree. Restricted to homogenous population groups, the examination of sub-samples can give an indication of the extent to which individual circumstances have an

influence on the time allocation within the household. The results of the housework equations are presented in Table 5.[39]

Table 5: Results of the sub-samples from the integrative application

TU Housework as regressand Regressors	Sample of age groups[a]				Sample of employed persons[b]			
	Men		Women		Men		Women	
Household income	(-)		(-)	***	(-)		(-)	***
Income of partner	(+)		(+)	***	(+)	**	(+)	***
Ratio of income	(-)	***	(-)	***	(-)	**	(-)	***
Income from rent	(-)		(+)		(-)	***	(+)	
Partner: Working time	(+)		(-)		(+)		(-)	
Sunday	(+)	***	(-)		(+)	***	(-)	
Self-employed	(-)	***	(-)		(-)	***	(+)	
School-leaving certificate 'Realschule'	(+)		(-)	**	(+)		(-)	
School-leaving certificate 'Fachoberschule'	(+)	*	(-)	***	(+)		(-)	***
School-leaving certificate 'Abitur'	(+)		(-)	***	(+)		(-)	***
Persons over 16 years	(-)	***	(+)	***	(-)	***	(+)	
Number of children	(-)	***	(+)	***	(-)	***	(+)	***
Children under 6	(+)	***	(-)		(+)	**	(-)	
Aged between 20	.		.		(-)		(-)	
Aged between 21 and 30	(-)		(-)	***	(-)		(-)	*
Aged between 31 and 40	(-)		(-)	***	(+)		(-)	***
Aged between41 and 50	(+)		(-)	**	(+)		(-)	
Age of partner	(-)		(-)		(-)		(+)	
East Germany	(+)	**	(+)		(+)	***	(+)	
up to 20.000	(-)		(+)	**	(-)		(+)	
CDU/CSU	(-)	**	(-)		(-)	**	(-)	
Partner: CDU/CSU	(-)	***	(+)	*	(-)	***	(+)	
Home help	(+)	*	(-)		(+)	*	(-)	
Microwave	(+)	**	(-)		(+)	**	(+)	
Washing machine	(-)		(-)		(-)		(-)	
Motor-car	(+)		(-)		(+)		(-)	
Discontentment housework	(-)	**	(+)		(-)	**	(+)	***
Discontentment health	(-)		(-)	***	(-)		(+)	
Partner: Discontentment health	(-)		(-)	**	(+)		(+)	
Number of observations	3031		3155		2857		1844	
Adj. R-squared	0,14		0,19		0,11		0,13	

[a]: 25 to 59 years

[b]: min. 20 hours per week

The first sub-sample is restricted to persons aged (at least) 25 to (under) 60 years. All other exemption criteria remain equal. The average age sinks in this sample from 52 to 43 for men

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[39]The results of the employment equations as well as the marginal effects and elasticities can be obtained from the authors.

and from 50 to 43 for women. The estimate is now restricted to 3030 men and 3155 women. Five variables lose their significance in the case of women,[40] six in the case of men.[41]

The second sub-sample is restricted to employed persons who work at least 20 hours per week, i.e. who have at least a part-time job. The remaining exemption criteria correspond to the criteria presented in Chapter 3.1. The average ages correspond (approx.) to those of the first sub-sample. The sample of women is reduced to 1844 observations, the sample of men to 2856. In the estimate for women eight variables[42] lose their significance and the regressor 'Contentment housework' of the sociological approach changes its sign. Contrary to previous results, there is, amongst working women, an especially high level of discontentment with housework on the part of women who tend to bear a greater burden. It remains conspicuous that the number of persons over 16 years no longer influences the housework time of working women. It could be the case that such women can or must delegate additional work arising in connection with the size of the household. In the sample of men six variables lose their significance,[43] the partner's income and the home help instead becoming positively significant. The insignificance of school education may be explained by the exemption criterion of employment, considering that the reference category without school-leaving certificate or certificate from a Hauptschule is represented only modestly in the sample.[44]

In comparison with the results presented in Table 4, the following conclusion may be drawn: If the woman in a relationship is gainfully employed, men seem to be rather more prepared to take on 'unpleasant' housework. This is clearly borne out by the positive significance of the partner's income in sub-sample 2 of men, and is underpinned for both sexes by the insignificance of the variables 'Sizes of municipal community under 20.000.' The variable 'Partner: CDU/CSU' also loses its significance for working women. It is possibly the fact of their own employment which furnishes them with an argument for sharing work with their partners, even in more traditionally based structures (rural area, conservative political attitude). In the case of men in the sub-groups, their own health and that of their partner no longer exert an influence on their household activities. This also holds for working women. In the light of the tendentially 'healthier' samples of employed persons, this result fails to surprise.

Here, also, the predominant share of determinants identified by the individual theories retains its robust influence on individual time allocation, especially in the case of men. This shows that the allocation of housework within a household or the time spent on housework is relatively independent of the individual way of life. Nevertheless, this result clearly points out that, owing to the relatively marginal explanatory nature of the estimate, there remains a considerable demand for research on the theoretical and empirical analysis of time allocation.

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[40]Age of partner, Children under 6, Washing machine and Contentment housework.

[41]School-leaving certificate 'Realschule', Income from rent, Size of municipal community under 20.000, Motor car, and Contentment health.

[42]Although the two age groups up to 20 and between 40 and 50 also lose their significance, this may be explained by the exemption criterion of employment. The following become insignificant: Partner: CDU/CSU, Size of community under 20.000, Age of partner, Contentment health, Home-help, Washing machine, School-leaving certificate 'Realschule', and Income from rent.

[43]School-leaving certificate 'Realschule', Income from rent, Size of community under 20.000, Motor-car, and Contentment health.

[44]In the case of women the share drops from 50% to 29%, in the case of men from 50% to 37%.

6   Closing remarks

The present study examines the gender-specific time allocation regarding housework in Germany. Initially, three theories from various fields of research were empirically surveyed in this context. The studies clearly demonstrate that both sociological and economic variables contribute to the explanation of time allocation. It must, however, be conceded that the results also reveal that none of the approaches represents a comprehensive theoretical basis for people's time allocation.

The model presented in part two of the study therefore undertakes to combine the various theoretical approaches with each other and to examine them empirically. Besides taking into account the simultaneity between housework and paid work, the variables identified by the different theories have been incorporated into the model. Overall, men and women's variability of time allocation can, even with the wide-ranging questionnaire of the Socioeconomic Panel, be only partially explained. In this sense, little has been achieved since the beginnings of research into the subject of time allocation within a household (Godwin, 1991). It should, however, be noted that the influence of numerous personal characteristics across all specifications have a robust influence on the individual time allocation of men and women.

A detailed survey on this subject certainly has greater chances of better explaining the defining reasons. It remains to be seen which additional results can be provided by, for example, the data set of the time-budget survey conducted by the Federal Office for Statistics, available since the end of 2003.

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Appendix

I. List of variables

Name of variable	Explanation	Value/Unit
Endogenous variable		
TU Housework	Number of hours for housework and errands (weekdays)	integer, between 0 and 16 hours
Further time use variables		
TU Occupation	Number of hours for occupation, training or spare-time job (weekdays)	integer, between 0 and 16 hours
TU Housework	Number of hours for household activities (weekdays)	integer, between 0 and 14 hours
TU Child care	Number of hours for child care (weekdays)	integer, between 0 and 16 hours

continued overleaf

Name of variable	Explanation	Value/Unit
TU Errands	Number of hours for errands (weekdays)	integer, between 0 and 8 hours
TU Training and further education	Number of hours for training and further education or studies (weekdays)	integer, between 0 and 13 hours
TU Maintenance	number of hours for maintenance (weekdays)	integer, between 0 and 10 hours
TU Hobbies	Number of hours for hobbies and leisure (weekdays)	integer, between 0 and 15 hours
Exogenous variables		
Income	Amount of person's own net earnings in last month	in thou. DM
Income of partner	Amount of partner's net earnings in last month	in thou. DM
Household income	Monthly income of all household members after taxes and social contributions (without regular payments such as pensions, housing benefit, family allowances, student grants, alimony etc.)	in thou. DM
Ratio of income	Ratio of person's own wages to household income, corresponds to the quotient from person's own net earnings of the last month and net household income	in percent
Potential hourly wage	By means of the two-stage Heckman Procedure a wage function is estimated for women and men, respectively. In the second step, the observed wage rates – i.e. wage rates yielded by the net earnings of the last month and the actual weekly working time – of employed women and men are regressed to schooling, vocational training, and age as an indicator for labour market experience (singly and squared), and additionally for the correction factor lambda which was evaluated in the first step and which controls the possible selectivity of the group of employed women and men. The correction factor is estimated using schooling and vocational training, the age (singly and squared), the presence of children of up to three years, and a variable which assumes the value one if the person is married and cohabiting with the partner.	
Social Assistance	A household member received social assistance or another form of assistance from Social Assistance Office (Sozialamt) in 1999	dichotomous
Income from rent	The household had income from letting or leasing land or housing in 1999	dichotomous
Assets of 5.000 to 10.000	Income arising from interest, dividends and profits on investments (savings account/giro savings account, life insurance, securities and company assets in 1999), amounting to between 5.000 and 10.000 DM	dichotomous
Assets of over 10.000	Income arising from interest, dividends and profits on investments (savings account/giro savings account, life insurance, securities and company assets in 1999), amounting to over 10.000 DM	dichotomous
Working hours	A person's working hours per week	in hours, between 0 and 80 hours per week
Partner: Working hours	Partner's working hours per week	in hours, between 0 and 80 hours per week
Partner: Unemployed	Partner's actual working time equals zero	dichotomous

continued overleaf

Name of variable	Explanation	Value/Unit
Sunday	Regular and occasional Sunday work, as household-economic theory draws on further extraordinary work loads to explain the division of labour	dichotomous
Self-employed	Currently in self-employment	dichotomous
Menial work	Menial worker, lower or mid-tier clerk or civil servant	dichotom
School-leaving certificate 'Hauptschule'	Person possesses Hauptschule certificate, this variable representing the reference category of the education variables, as the attribute 'no school-leaving certificate' is not found in the sample	dichotomous
School-leaving certificate 'Realschule'	Person possess 'Realschule' certificate	dichotomous
School-leaving certificate 'Fachoberschule'	Person possess 'Fachoberschule' certificate	dichotomous
University entrance certificate 'Abitur'	Person possess 'Abitur' certificate: generally, it is the highest certificate which counts	dichotomous
Difference in education	Difference between the person's own completed years of schooling and those of the partner, assuming standard periods of schooling, i.e. Abitur upon completion of 13 years, Fachoberschule upon completion of 12, Realschule 10 years and Hauptschule 9	integer from -4 to +4, whereby negative values signify that the partner has the higher certificate
professional qualification 'Lehre'	When someone has completed vocational training and the like	dichotomous
professional qualification 'Fachhochschule'	When someone has visited training college and the like	dichotomous
professional qualification 'Universität'	When someone holds a degree from a university or technical college	dichotomous
Living quarters	Number of living quarters over 6 square meters in household	integer, between one and 15
Size of household	Number of persons in household	integer, between two and ten persons
Persons over 16	Number of persons over 16 years in the household (e.g. older children or relatives living in the household)	integer, between two and seven persons
Number of children	Number of children under 16 years in the household	integer, between zero and eight
Children under 6	Children under 6 years in the household	dichotomous
Age	Person's age	integer, between 18 and 94 years
Age cohorts	Six categories are formed from the particular age groups: aged under 20, aged between 21 and 30, aged between 31 and 40, aged between 41 and 50, aged between 51 and 60, and aged over 60	dichotomous
Age*Age	Person's age squared	
Age of partner	Partner's age	integer, between 18 and 94 years
Turkey	Person holder of Turkish citizenship, controls for a foreign culture and the largest foreign population group	dichotomous

continued overleaf

Name of variable	Explanation	Value/Unit
East Germany	Person lives in the New Federal States (former GDR) including East Berlin, controls for still differing mentalities and structures reflecting the fact that in the former GDR the traditional understanding of the gender roles was less pronounced than in former West Germany, with women participating in the labour market in the same manner as their male counterparts.	dichotomous
Below 20.000	Small town as size of community in which a person lives	dichotomous
20.000 to 100.000	Medium-sized town as size of community in which a person lives	dichotomous
100.000 to 500.000	City as size of community in which a person lives	dichotomous
CDU/CSU	Person has strong or very strong preference for the CDU/CSU party, controls for a person having a more conservative attitude	dichotomous
Partner: CDU/CSU	The partner has a strong or very strong preference for the CDU/CSU party	dichotomous
Home help	Persons (not household members) who regularly or occasionally assist with housework	dichotomous
Microwave	Device is present in household	dichotomous
Dishwasher	Device is present in household	dichotomous
Washing machine	Device is present in household	dichotomous
Motor-car	Motor-car is at disposal of household	dichotomous
Contentment housework	Measures contentment with household activity on a scale from 0 to 10, where 0 stands for 'very discontent' and 10 for 'very content'. The values are presented only in the descriptive part, the subsequent dummy being incorporated into the estimate	ordinal
Discontentment housework	Measures discontentment with household activity, whereby the entries with the value 0.1 and 2 on a 10-point scale were pooled, 0 standing for 'very discontent'.	dichotomous
Contentment health	Measures contentment with a person's health on a on a scale from 0 to 10, where 0 stands for 'very discontent' and 10 for 'very content'. The values are presented only in the descriptive part, the subsequent dummy being incorporated into the estimate	integer, ordinal
Discontentment health	Measures discontentment with a person's health, whereby the entries with the value 0.1 and 2 on a 10-point scale were pooled, 0 standing for 'very discontent'.	dichotomous
Partner: Contentment health	Measures the partner's contentment with his /her state of health on a scale of 0 to 10, with 0 standing for 'very discontent' and 10 for 'very content'. The values are presented only in the descriptive part, the subsequent dummy variables being incorporated into the estimate	integer, ordinal
Partner: Discontentment health	Measures the partner's discontentment with his /her health, whereby the entries with the value 0.1 and 2 on a 10-point scale were pooled, 0 standing for 'very discontent'. The variable represents a pressure in household-economic theory.	dichotomous

II. Marginal effects and elasticities

Marginal effects and elasticities of a logistic function $ln\frac{P_{TU}}{1-P_{TU}} = a + bX$ are calculated as follows (Ramanathan, 1998, p. 257):

$$\text{Marginal effect:} \quad \frac{\delta P_{TU}}{\delta X} = bP_{TU}(1 - P_{TU})$$

$$\text{Elasticity:} \quad (\frac{X}{P_{TU}})(\frac{\delta P_{TU}}{\delta X}) = bP_{TU}(1 - P_{TU})(\frac{X}{P_{TU}})$$

Marginal effects and elasticities are calculated in lieu of the mean values of the regressor (cf. Table 1) and are expressed as variance in the number of hours (P_{TU}) spent on housework. The values for the marginal effects are to be interpreted as follows: 0.45 means that for men, increasing the regressor 'Income of partner' by one unit increases the housework time by 0.45 hours, i.e. by 27 minutes. Elasticities indicate in percentage terms the degree to which the endogenous variable 'Contentment housework' varies when the individual regressor is adjusted by one percent. [45]

Table 7: Marginal effects and elasticities of the empirical application of the theories

Regressors	Men Marginal effects	Elasticity	Women Marginal effects	Elasticity
Economic theory				
Potential hourly wage of partner	-1,69	-0,98	3,72	1,85
Potential hourly wage	2,53	2,08	-3,78	-1,32
Income from rent	-1,46		0,25	
Assets of 5.000 to 10.000	-0,21		-0,03	
Assets of over 10.000	-0,36		-0,74	
Persons over 16 years	-1,07	-1,45	0,45	0,23
Number of children	-1,42	-0,42	0,70	0,07
Household-economic theory				
Income	-0,03	-0,04	-0,60	-0,11
Income of partner	0,74	0,37	0,03	0,02
Working hours	-0,13	-1,97	-0,04	-0,12
Partner: Unemployed	-0,28		-0,44	
Sunday	1,96		0,06	
Self-employed	-1,07		0,35	
Menial work	0,54		0,11	
School-leaving certificate 'Realschule'	0,75		-0,26	
School-leaving certificate 'Fachoberschule'	0,72		-0,99	
School-leaving certificate 'Abitur'	0,31		-0,54	
professional qualification 'Lehre'	-0,05		-0,24	
professional qualification 'Fachhochschule'	0,37		-0,19	
professional qualification 'Universität'	0,06		-0,03	
Living quarters	-0,12	-0,31	0,08	0,08

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[45]No elasticity is specified for dummy variables, as this leads to no meaningful statement of fact.

Table 7: Marginal effects and elasticities of the empirical application of the theories

Regressors	Men		Women	
	Marginal effects	Elasticity	Marginal effects	Elasticity
Size of household	-0,64	-1,06	0,27	0,16
Children under 6	0,54		-0,34	
Age	0,08	2,39	0,14	1,57
Age*Age	0,00	-1,97	0,00	-0,79
Home help	0,51		-0,61	
Microwave	0,49		-0,07	
Dishwasher	-0,57		-0,06	
Washing machine	0,13		1,31	
Motor car	0,75		0,22	
Discontentment health	-3,31		-2,73	
Partner: Discontentment health	1,56		0,40	
Sociological Theory				
Household income	0,26	0,06	-0,01	-0,01
Ratio of income	0,00	0,26	-0,02	-0,06
Social assistance	0,09		0,12	
Working hours	-0,13	-1,96	-0,05	-0,15
Partner: Working hours	0,05	0,40	0,01	0,05
School-leaving certificate 'Realschule'	0,50		-0,28	
School-leaving certificate 'Fachoberschule'	0,77		-0,96	
School-leaving certificate 'Abitur'	0,41		-0,57	
Difference in education	-0,02	0,00	0,02	0,00
professional qualification 'Lehre'	-0,16		-0,23	
professional qualification 'Fachhochschule'	0,39		-0,25	
professional qualification 'Universität'	-0,25		-0,31	
Number of children	-0,81	-0,24	0,53	0,05
Children under 6	0,89		-0,66	
Age	0,00	0,03	0,18	2,04
Age*Age	0,00	-1,27	0,00	-1,07
Age of partner	0,03	0,90	-0,01	-0,06
Turkey	-2,67		0,69	
East Germany	0,84		0,28	
below 20.000	-0,43		0,30	
between 20.000 and 100.000	0,18		0,14	
between 100.000 and 500.000	0,48		-0,15	
CDU/CSU	-0,54		0,16	
Partner: CDU/CSU	-0,74		0,46	
Discontentment housework	-2,04		-2,26	

Table 8: Marginal effects and elasticities of the integrative approach

	Men		Women	
Regressors	Marginal effects	Elasticity	Marginal effects	Elasticity
TU housework as regressand				
Household income	0,00	-0,01	-0,10	-0,11
Income of partner	0,22	0,11	0,09	0,04
Ratio of income	-0,06	-1,37	-0,05	-0,17
Income from rent	-1,01		0,17	
Partner: Working time	0,01	0,10	0,00	0,01
Sunday	1,49		-0,12	
Self-employed	-2,57		-0,17	
School-leaving certificate 'Realschule'	0,41		-0,38	
School-leaving certificate 'Fachoberschule'	0,71		-1,00	
School-leaving certificate 'Abitur'	0,27		-0,58	
Persons over 16	-0,84	-1,13	0,22	0,11
Number of children	-0,81	-0,24	0,65	0,07
Children under 6	1,06		-0,44	
Aged under 20	-1,47		-2,72	
Aged between 20 and 29	-0,63		-1,57	
Aged between 30 and 39	-0,52		-1,49	
Aged between 40 and 49	-0,08		-0,56	
Age of partner	-0,02	-0,58	-0,02	-0,25
East Germany	0,63		0,21	
below 20.000	-0,55		0,26	
CDU/CSU	-0,42		0,14	
Partner: CDU/CSU	-0,69		0,37	
Home help	0,36		-0,65	
Microwave	0,45		-0,01	
Washing machine	-0,30		1,33	
Motor-car	0,97		0,13	
Discontentment housework	-1,49		-1,75	
Discontentment health	-2,97		-2,55	
Partner: Discontentment health	1,15		0,33	
TU Paid work as regressand				
Household income	0,58	0,49	0,55	0,81
Income of partner	2,38	0,35	0,23	0,15
Ratio of income	0,46	3,27	0,44	2,17
Assets 5.000 to 10.000	-0,88		-0,86	
Assets over 10.000	0,06		-1,46	
Partner: Work time	0,07	0,19	0,04	0,36
Self-employed3,91		8,31		
Menial work	6,01		9,43	
School-leaving certificate 'Realschule'	0,44		0,93	

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Table 8: Marginal effects and elasticities of the integrative approach

Regressors	Men		Women	
	Marginal effects	Elasticity	Marginal effects	Elasticity
School-leaving certificate 'Fachoberchule'	-0,16		1,75	
School-leaving certificate 'Abitur'	0,11		0,32	
professional qualification 'Universität'	-1,76		-0,22	
Living quarters	0,15	0,11	0,22	0,28
Persons over 16 years	1,93	0,77	0,26	0,18
Children under 6	-0,69		-2,46	
Aged under 20	-1,02		10,61	
Aged between 20 and 29	4,22		2,80	
Aged between 30 and 39	2,26		2,78	
Aged between 40 and 49	1,04		2,22	
Age of partner	-0,04	-0,38	0,02	0,31
Turkey	-2,84		-3,96	
East Germany	2,03		0,23	
Dishwasher	-0,22		0,45	
Washing machine	1,95		0,07	
Discontentment housework	-1,40		1,53	
Discontentment health	-2,71		-1,77	
Partner: Discontentment health	1,68		0,82	