

The Unobserved Economy – Invisible Production in Households. The Household Production Satellite Account and the National Time Transfer Account

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ABSTRACT

Standard measures of economic activity relate to goods and services offered by the market. Stiglitz's report, however, suggests that not only monetary value or economic products create welfare, but non-monetary components should also be included in the System of National Accounts. Although household production is registered in official statistics, the main part of it, i.e. nearly 75-80% of the total home production remains outside of the GDP. The Household Production Satellite Account (HHSA) is a macroeconomic analysis covering both market and non-market home production. The National Time Transfer Accounts (NTTA) is, next to HHSA, an analysis aimed to register and observe the directions of transfers and to present the recipients and givers of home production. Regular estimations provided by the HHSA and NTTA may prove a valuable supporting tool to national accounts, pension systems, or social policy as they provide a great deal of macroeconomic information regarding households, their economic and living conditions, social changes, and welfare.

Key words: generational economy, household production, unpaid work, GDP, Household Production Account, National Time Transfer Accounts.

1. Historical view of the valuation of unpaid work and household production in Poland

The estimations of the unpaid work done by household members for their own use and to satisfy their needs have its relatively long tradition in Poland. The latest one was a foundation to provide the first full sequence of accounts titled the Household Production Satellite Account (Marszałek, 2015).

The first attempts to estimate monetary value of housework were made in the 1970s. In 1976 L. Szczerbińska estimated the unpaid work in Poland as PLN 448 007 million, which was 25.6% in relation to GDP. The monthly value of the unpaid work

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per person accounted PLN 1585, which constituted 39.9% of the average monthly net remuneration in the economy. According to L. Szczerbińska's estimations, the monetary value of women's unpaid work was 79.2%, for men's 20.8% of the total housework done in 1976. In that analysis to estimate the monetary value of housework, the replacement cost approach and the market cost method were used (Szczerbińska, 1987; Błaszczak-Przybycińska, 2008).

An expanded valuation of unpaid housework was carried out in the 1980s by the Central Statistical Office in Poland (GUS) and the Polish Academy of Science (PAN). L. Szczerbińska compiled the next valuation of unpaid work made in households in Poland in 1984. The analysis was a continuation of the researches of the estimates of extended final consumption expenditure. Childcare, adult care and disabled persons care, were excluded from the calculation then. Why care as a group of non-market household activities is outside the official estimations of GDP? The main reason is that each of caring activities generate only costs and they are not significant for total consumption of all housework in households (Marszałek, 2015; Błaszczak-Przybycińska, 2008).

The next analyses of housework were provided in 1990s in Warsaw School of Life Science (SGGW). K. Niewierowska observed households of farmers in Drohiczyn commune. Based on empirical analysis she counted the unpaid work in that type of households in one of region in north-eastern Poland. The monthly value of housework was estimated using two methods: replacement cost method and simplified method. The average monthly monetary value was different for each method. First of them was counted as PLN 658, second PLN 546. The average remuneration in the region was PLN 578. The author of that calculation noticed that the highest wage in the analysis was assigned to food management (Niewierowska, 1997).

In 1995, the estimation of the monetary value of housework focused on women's work and their participation in creating non-market household production. B. Mikuta applied and implemented two different approaches: *simplified method* and *replacement cost method* (Mikuta, 1998). The *simplified method* was calculated as the amount of time of performing activities multiplied by unified gross remuneration rate. The *replacement cost method* was estimated as a sum of an average duration of some groups of household activities multiplied by an average gross remuneration rate for each group of housework (Błaszczak-Przybycińska, 2008: pp. 111-112).

The monthly monetary value of home activities was counted as PLN 808 (*simplified method*) and PLN 722 (*replacement cost method*). The average monthly gross remuneration in Płock region in 1996, where the survey was carried out, amounted to PLN 929 (the average monthly remuneration in Poland was PLN 874). The dimension and the monetary value of unpaid work confirm that economic impact of households'

activities could be more significant in the economy than it is observed in official statistics, which registers only a small part of household production.

The most comprehensive estimations of the monetary value of unpaid work for women and men in households in Poland were based on time distribution of households in Time Use Survey for Poland 2003/2004 and 2013. The Time Use Survey 2003/2004 and 2013 was harmonized with the European Time Use Survey, and it guarantees the comparability with results of other European countries, where the survey was carried out.

I. Błaszczak-Przybycińska developed the basis and methodological guidelines to further analyses of the non-market household production (Marszałek, 2015). The author applied the *input method* to calculate the value of unpaid work in 5 groups of home activities: household upkeep, food management, making and care for textiles, child and adult care, help for other households (Błaszczak-Przybycińska, 2007). Groups of home activities were corresponding with households' functions which are fulfilled to meet own needs or other household member's needs. Only the *household and family care* group was taken into account from TUS 2003/2004 and 2013 because other activities, e.g. personal services, hobby, interests, sport were excluded from the estimation and it was in accordance with the *productivity criterion* also known as a *third part criterion*, a *third person criterion* or *M. Reid criterion*. That criterion assumes that only activities that could be done by a hired person without losing any utility for that household can be valued (Eurostat, 1999, p.7). Thereby each household's productive activity can be valued using the market cost of similar services offered on the market.

In order to estimate the monetary value of housework, also *Survey of Wages According to Professions 2002* (GUS, 2004) was used. Hence, average hourly wages of professions were adapted to the housework monetary valuation.

Monthly average gross value of housework in 2004 was assumed at 1000 PLN per person. The relation of women's household work to men's household work was 1:0.574 in 2004. In 2013, the monetary value of housework amounted to PLN 1672. The proportion of women's housework and men's housework was 1:0.576 in 2013.

In comparison with 2004, the highest changes in the value of housework in 2013 were noticed in the case of help for other households and childcare. Probably it is convergent with the tradition. Polish society is more traditional than the societies of Western European countries. The care, mainly childcare, adult care and informal help for other households, e.g. supporting elder parents or grandparents is closed to family model and social expectations. Households in Poland take care of their family members more often than they outsource the care, although they are burdened with other liabilities.

2. Data source of HHSA and NTTA

The time use survey 2003/2004 (TUS 2003/2004) and 2013 (TUS 2013) was the fundamental source of information about the time spent on unpaid household work. Those surveys were harmonized with the European Time Use Survey methodology, which ensures comparability with other countries.

In both time use surveys the respondents were 15 and above, in TUS 2013 also the sample of 10 and above was observed. All activities were registered in diaries in 10-minute intervals. In TUS 2003/2004 and 2013 the lists of more than 200 activities within ten groups were arranged. In both surveys the six household types were distinguished by the main source of income: employees, employees-farmers, farmers, self-employed, retirees and invalid pensioners and those living on unearned sources other than invalid-pension and retirement. Every respondent registered all activities done in 2 days: one day from Monday-Friday and the other day: festive day during Monday-Friday or Saturday-Sunday. In the Household Production Satellite Account 2011 the system of wages was applied in accordance with the wage for the day from the time use survey.

As far as the valuation of household work and production is taken into account, the main group of activities was the *household and family care* group. In accordance with Margaret Reid's third party criterion only productive activities can be valued in the estimation of unpaid work and non-market household production. Some activities such as personal services must be excluded from the estimation. Finally, 47 household activities within 5 groups were taken into account in the calculations. The groups of activities in the estimation of household work were compatible with the household's functions. In the analysis, the following were distinguished: household upkeep, food management, making and care for textiles, care (childcare and adult care), help for other households (voluntary work for other households). Also, transport and household management were estimated in the analysis in proportional part for the each group of activities.

3. Household production satellite account for Poland

The household production satellite account (HHSA or HPSA) is a full sequence of accounts with information about the value of domestic work, intermediate consumption and capital which are collected and used in households for own needs or other households member's needs. The HHSA could be a comprehensive compilation and a supporting tool for the national accounts. It presents the monetary value of unobserved household production generated for themselves and outside their household, e.g. grandparental help, adult care for elder parents, neighbourly help.

International discussions on that topic have been continuing for at least 4-5 decades. The Eurostat (European Union Statistical Office) and other global institutions recommend that to better understand the social and economic conditions of households and their contribution to the national economy is to estimate the monetary value of domestic work and home production as the household production satellite account. That compilation of full sequence of accounts provides information about unpaid products and services which were produced in households but are not offered on the market. The households' goods and services made for own use do not have a price, but they are valuable. No price is not equal with no value. Household members used the products made in home, e.g. home-made dinner, clean and tidy home, washed clothes, childcare, help for other households without any market price and cost. Also, any market transaction exists in home production for own use. If someone acquires the same goods or services, they will buy it on the market and that transaction will be noticed in GDP.

In international calculations of the HHSA, the value of homemade products and services is estimated at nearly 10-20% of total household production (market and non-market), and it was called *market production* and registered in the national accounts. The major part of the home production is generated for own consumption (Marszałek, 2015). It is called *the non-market household production*, so it is non-observed in the national economy and it is made outside GDP. Non-market home production does not generate any monetary transactions so it is excluded from the market. Although the non-market home production is outside the national statistics, it has a crucial role in well-being research of the households' economic and living conditions.

The estimation of non-market household production is based on calculations of the amount and value of housework, intermediate consumption and capital. The domestic work has the basic and crucial share in total home production made for their own final consumption. The next critic point of the home production estimation is calculating consumption. In order to provide a comprehensive view of the production's process in households, consumption is divided into three types: final consumption, intermediate consumption and capital consumption (depreciation). The final consumption, which means the proper using up of a product: eating food, wearing clothes, feeding baby. Secondly, there is intermediate consumption, which covers the products as a part of the production process, e.g. vegetables, meat, fruits used when cooking dinner. Thirdly, consumption refers to capital services produced by the machines, appliances required in the production process. Capital services consist of: consumption of fixed capital, i.e. depreciation of equipment, machinery, appliances used at home, and interest referring to the acquisition of capital. In the Household Production Satellite Account only the consumption of fixed capital (depreciation) is included (Varjonen & Aalto, 2006, p. 22).

4. Valuing of housework and household production in HPSA – methods

The full sequence of accounts for household production (market and non-market) in Poland and the methodology is based on the framework of national accounts consisting of the whole sequence of accounts (Eurostat 1999; Eurostat 2003).

In literature and economic practice two different methods are recognized and used – *input method* and *output method*. *Input method* was implemented more frequent than *output approach*. When considering the choice of a specific production valuation method, some important assumptions should be included.

Input method is better known and permanently developing. The pioneer Eurostat's framework recommends to apply the *input method* for estimations of unpaid work in households (Eurostat, 1999).

Input method is based on the structure of time distributing during the 24-hours by all household's members. Data of time budget is using from the *time use survey*. Time is a main component to estimate the total monetary value of housework in each group of activity, i.e. house maintenance, food preparation, making and caring of clothes, childcare and adult care, volunteer work. Afterwards, when the structure of daily distribution of time between all housekeepers is recognized, the selection of a specific approach should be implemented (Figure 1).

Input method	Output method
The total value of housework (hours x professional rates of similar market work or service) + other taxes on production subsidies on production + consumption of capital = gross value added + intermediate consumption = total household production	The value of output (quantity x market price) = total household production intermediate consumption = gross value added consumption of the capital other taxes on production + other subsidies on production = mixed income (with compensation of employees and capital)

Figure 1. Input – output method of valuing the non-market household production

Source: Based on Eurostat 2003, pp. 12.

Finland (Varjonen, Hamunen & Soinnie, 2014; Varjonen & Aalto, 2006) and Germany (Varjonen & Rürger, 2008) also applied the input method and compared the results per capita between their countries. Hungary adjusted the input approach to valuing home production by size of household and type of the family. France provided

the estimation based on input method with three definitions of housework (unpaid work). The results of the widest perspective showed that over 80% in relation to French GDP were generated in households (Poissonnier and Roy 2013).

Poland reflects continuing works of the valuing housework and home production with the input method (Błaszczak-Przybycińska & Marszałek, 2019; Błaszczak-Przybycińska, 2008, 2007; Marszałek, 2015).

Individual estimation was proposed by the United Kingdom (Holloway, Short, Tamplin, 2002; Ironmonger & Soupourmas, 2009). The UK used the output method, which was more proper to make comparisons with GDP and production counted in the national accounts, but it did not cover a lot of controversial issues in home production estimation, e.g. caregiving activities, volunteering work, etc. The most crucial and debatable point is that the output method does not ensure the total overview of productive results of home activities. The output of washing clothes is possible to recognize if we have, for example, the total amount of clean clothing. The result of some housework in the output method is impossible to indicate if the effect is hard to identify, e.g. the output of caring children.

The input method is based on time spent used on home activities, so it can be countable and it is more useful to compare between the regions or the countries. This method is divided into two different approaches: replacement cost and opportunity cost. The replacement cost approach uses the rates of professions' salaries, which is calculated in the sum of the value of housework (1.).

Replacement cost method:

$$y = t_{m/w} * r, \quad (1.)$$

where:

t_w, t_m – time of all housework for women or men (in hours and minutes)

r – average rate per hour of professions (in market price)

The opportunity cost method provides the information about the hypothetical value of housework in relation to type of profession which is realized by individuals. This approach is less applicable than the replacement cost approach because the specification and differences between rates of the salaries determined not the volume but the monetary value of housework. If more paid specialists live in households, e.g. doctors of medicine, lawyers or others, their value of housework will be more expensive than housework of lower paid jobs, e.g. builders, nurses, teachers, home-cleaners (2.).

Opportunity cost method:

$$\text{value of housework (opportunity cost method)} = t_{m/w} * r_s, \quad (2.)$$

where:

$t_{m/w}$ – time of all housework for women or men (in hours and minutes)

r_s – rate per hour for different professions according with the specialization of someone's job (in market price)

The whole sequence of valuing processes (equations, scheme of the uses-resources tables of accounts) were presented in the previous analyses of the valuation of housework (Błaszczak-Przybycińska, 2008 & 2007; Błaszczak-Przybycińska & Marszałek, 2019 & 2015) and in the Household Production Satellite Account for Poland (Marszałek, 2018 & 2015).

5. Full sequence of accounts – Household Production Satellite Account 2011 – results

The first full sequence of accounts in the Household Production Satellite Account for Poland was in 2011. The output of household production (sum of market and non-market production) in Poland reached PLN 1109.8 billion (Table 1). Gross value added of household production was PLN 807.3 billion, of which 15% was included in the national accounts. The major part of household production is outside the market and official statistics. The fact that such a large amount of household production is not registered in the system of national accounts (SNA) might contribute to incomplete information about conditions of households.

Value added of housework is counted as more than 75% of total household production, while intermediate consumption – goods and services used in the production process – constitute 16 per cent of total output. The value of unpaid work made at home is the most important and a major component of non-market household production, because it provides information not only about time distribution in households by functions, but also informs about cost inputs of time spent doing housework. Input of domestic work constitutes the starting point for other social and macroeconomic estimations, e.g. for advanced analyses of childcare or adult care for family and social policy.

Sums of capital and intermediate consumption are lower than one third part of the total non-market production, which confirms that the value of labour is the most significant category of the household production valuation. Therefore, working on regular implementation and providing the household production satellite account should be pointed out at solving problems of estimation and harmonized methodology of domestic labour calculation.

Table 2. Household production in Poland in 2011 (million PLN)

Components of household production	Household production		
	SNA (market production)	NonSNA (non-market production)	Total (SNA + nonSNA)
	in GDP	outside GDP	
Value of labour (number of hours spent on housework x hourly rates)	°	644 390	644 390
Paid domestic staff	796	°	796
Housing services produced by owner occupiers (rents of equivalent rented accommodation)	53 160	°	53 160
Own-account house construction	42 088	°	42 088
Agricultural production for own use (hunting, fishing, picking berries and mushrooms)	7 598	3 301	10 899
Taxes on production	4 458	893	5 351
Subsidies on production	-5 030	-20 619	-25 650
Net value added	103 070	627 965	731 035
Consumption of fixed capital (depreciation)	21 515	54 708	76 223
Gross value added	124 585	682 673	807 258
Intermediate consumption	145 595	156 973	302 567
Output (household production)	270 179	839 646	1 109 825

Source: Own calculations based on the method proposed by Marszałek (2015), p. 163-167.

The incomplete data in official statistics, skipped in the non-market value of home production, might provide an incorrect view on social-economic analyses of welfare and living conditions, and as a result it may generate false conclusions of the situation of households. Households use all their resources: individual and group, cultural, social, monetary, and others to well-organized life and to fulfil needs. The utility that households strive for is in some sense produced by them. Households, which are both consumers and producers, perform basic functions with using not only monetary goods and services, but also non-monetary units. Therefore, it should be considered by official

statistics, not only in the core of national accounts, but as an additional complementary analysis – Satellite Account.

The contribution of households in the formation of GDP was counted as PLN 124.6 billion, and it was near 8.2% of total market production in 2011 in Poland. If the non-market home production sums up with market production the household production in relation to GDP will achieve 52.8%. The home production made outside the market was assumed at 44.7% in comparison with GDP (Figure 2).

GDP in Poland 2011		
1528.1 100%		
GDP excluding household production (SNA)	Gross added value of household production (SNA)	Gross added value of non- market production (nonSNA)
1403.5	124.6	682.7
	8.2%	44.7%
	} 52.8%	

Figure 2. Structure of GDP, market and non-market household production (billion PLN)

Source: Own calculations.

The non-market household production is invisible and it has no full reflection in the European System of National Accounts, which constitutes the gap of that value in the economy. If the non-market household production is included in official statistics, GDP will increase more than 30.9%. The extended GDP concept assumes inclusion of the non-market home production in the national accounts, therefore total production made in households as a goods and services offer to other households members and on the market will achieve 36.5% of the extended GDP measure.

Households carry out a lot of different functions to fulfil individual and group needs inside and for the other family members or neighbours outside home. The results of the monetary valuation of market and home production is presented in Figure 3.

The most diverse of the principal functions is housing. The sum of SNA home production and household upkeep spent for own use without any monetary transactions is the most valuable of all the groups of activities made at home. It assumes more than one third of total household production in 2011.

In the economic practise, housing consists of a wide scope of different domestic works carried out in a space called a dwelling. Housing production is understood in the Satellite Account in a deeper and broader sense than in the official statistics. Only a small part of the total home production made as housing is covered in the core national accounts. SNA-housing production contained: *housing services produced by owner-occupiers, own-account house construction*. Also, *paid domestic staff* is included in market boundaries called SNA housing. Non-SNA home production includes all other equipment related to maintain home clean and tidy. Home production covers also furnishing, minor repairs, gardening and yard maintenance. Only goods related to hobbies and interests are excluded from the calculations in the Household production satellite account (Błaszczak-Przybycińska & Marszałek, 2019).

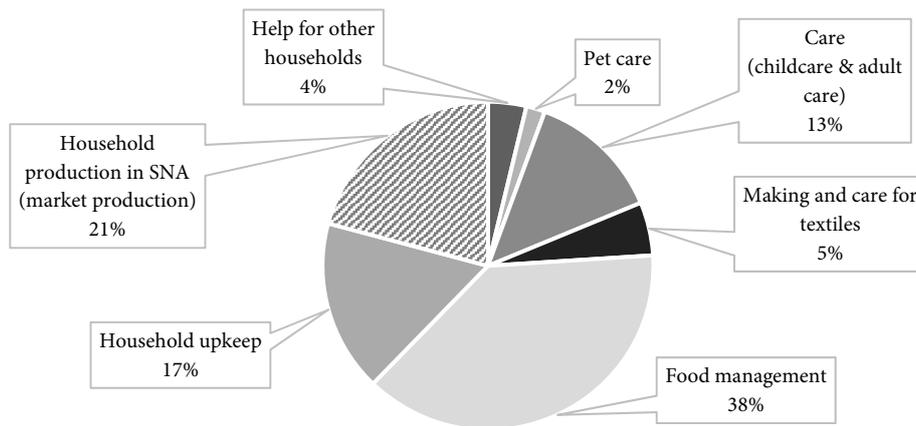


Figure 3. Structure of the household production for Poland in 2011 by functions (in %)

Source: Own calculations.

Considering groups of domestic work separately, the most valuable and crucial to life is the food management. The preparation of meals and snacks consumed within the household, so the output of the services, is fully clearly visible and tangible in opposite to other services offered in the households, e.g. childcare or help for other adults from the same household or outside home. The SNA food management covers *the agricultural production for own use (hunting, fishing, picking berries and mushrooms)*.

Non-SNA food management provides the production of meals, snacks, baking, preserving and other related activities, such as buying groceries, utensils and appliances for the food preparation. Also, non-SNA home production of food management included housework relative to washing dishes, setting the table, cleaning after a meal and other related activities. The food management covers 38% of total home production made in households in 2011 (Figure 3).

Making and care textiles do not have a crucial role in the formation of home production in Polish households now. Twenty-thirty years ago, when the lack of many goods and products was noticed in Poland, the households members, mainly women, were engaged in making clothes by themselves for own use or for others. Currently, the most visible services made in households are related to washing and ironing clothes, rarely mangling, repairing clothes or footwear. Near 5% of home production is provided by making and care textiles.

Childcare and adult care is the most complicated function to organize and estimate the monetary value. Caregiving assumes not only services offered to other dependent underage or adult persons but also goods used during the production process. It is hard to distinct, select and integrate them into the Household production satellite account. The most troublesome for home production of care is to estimate the value of time input dedicated to children or adults. Some of activities are treated as a second activity done during other housework, e.g. the main activity is cooking dinner, the second is passive taking care of a child. Therefore, it is important to count the proper part of home production in providing care. Production related to the care of a household member is not registered as such in the core national statistics. The home care of one's own children or adult family member who lives in the same household or outside in a separate household is supported by allowances, e.g. parent's allowance, nursing support for elder or disabled person. In the Household Production Satellite Account, allowances were taken into account in the form of subsidies on production. Care provided at home was counted more than one fifth of the household production.

Pet care has a similar concept of the estimation to childcare and adult care. Some researchers claim that caring for pet is discussable to calculate it into the Household production satellite account. If it is treated as a hobby, it should not be included into the calculation of home production. But if it is considered as a work which could be done on the market by a third person, it will be productive for households and in accordance with *the third part criterion*.

Help for other households has provided 4% of home production. Some activities are dedicated by elder person to other family member who lives in a separate household or to friends or neighbours. That group of housework is also a minor component of the household production determined by the amount and the value of domestic work but it is important for social and family life. Probably, in near future the role of help for other households or voluntary work will increase, which is related to demographical changes in the Polish society.

6. National Time Transfer Account for Poland

The National Time Transfer Account (NTTA) for Poland in 2013 was based on the Time Use Survey 2013 results of time dimension of households' members. The NTTA is the part of the global concept of understanding the generational economy (Mason & Lee, 2011). Making home production and consumption visible is a crucial assumption of the NTTA conception. Also, private and public transfers in households are important to be registered into the National Transfer Accounts (NTA). Both formations of accounts: the NTTA and NTA, present the receivers and givers of home production and consumption, public and private transfers. They figure interactions between family inside and outside their own households. Those calculations of the NTTA and NTA could be important, valuable and crucial information carriers for the core national accounts. In the case of the NTTA, the number of members living in a household is not relevant, aspects such as age and sex of the receiver or giver of the unpaid home production are more informative. The fundamental aim of the estimation of different transfers could provide the existing gap in social statistics of households' role and households' productivity in the economy.

In the National Time Transfer Accounts, each group of housework which defined the household production was counted as a result of time spent on housework multiply by the average rate per hour of professions corresponding to selected domestic productive activity. The monetary value of childcare is based on an aggregate of some types of average rates of different professions, e.g. teachers, nurses, coaches, lecturers. The same concept of estimation might also be applied to other types of home services: household upkeep, food management, making and care for textiles, help for other households. The distinction between average rates of professions for each group of domestic work is significant because the knowledge, skills and abilities are different for them (Table 2).

Table 2. The average net hourly rates for monetary valuation of home production in National Time Transfer Accounts for Poland in October 2013 (in PLN)

Groups of activities of housework	Average net hourly rates Oct. 2013 (PLN)
Household upkeep (cleaning)	8.01
Making and care for textiles (laundry)	8.68
Food management (cooking)	8.31
Household maintenance	10.37
Gardening	10.09
Household management	13.41
Pet care	9.00
Shopping and other services	11.21

Table 2. The average net hourly rates for monetary valuation of home production in National Time Transfer Accounts for Poland in October 2013 (in PLN) (cont.)

Groups of activities of housework	Average net hourly rates Oct. 2013 (PLN)
Travelling	10.98
Childcare (household)	21.61
Childcare (non-household)	22.44
Help to an adult family member (household adults)	11.27
Help to an adult (non-household adults)	14.54
Informal help to other households (volunteering care)	10.41

Source: Own analysis based on POLNTA project realized at SGH.

The transfers of production and consumption in the NTTA are based on detailed estimations and the sum of the time units allocated in different home productive activities to fulfil own needs or other housekeepers' needs or expectations, and also for outside the household, e.g. for the elder parents, grandparents, other family, neighbours, etc., multiplied by average rates of professions for different groups of housework. The value of household production was estimated separately for women and men. Their arrangement of performing home activities is different, which is registered in the final calculation of the transfers between generations and households (Table 2).

In the NTTA, the process of selected information is analogical to the HPSA. Time is an important component to estimate the monetary value of unpaid work (housework) and home production. The differences focus on the average rates of professions. In the HPSA, the average monthly wages of professions are directly from the "*Survey of Wages According to Professions*". Market wages were matched to similar home activities, e.g. cooking dinner with average monthly wage of a sub chef of the cook, not the cook – because in the HPSA only the lowest wages were implemented in the estimation of housework. It indicates that the valuation of housework and home production is not overestimated but it is more possible that some activities which were registered in time use survey as a secondary activity were not counted and observed in HPSA.

The rates (wages) implemented in the NTTA are different than in the HPSA because they are the sum of average of few various rates of professions for the group of activities, e.g. to calculate the value of childcare from own households of the selected wages of teachers, tutors, nurses, babysitter, etc. were used in the estimation. Both methods implemented in the NTTA and in the HPSA are effective, but they ensure various type of information for the analyses of distribution and transfers of time in households.

7. Unobserved production in households – NTTA results

The idea that ageing is only a developed country problem is no longer valid in practise. Rapid fertility decline in many developing countries and results of that have been observed. The response is the concept of National Time Transfer Accounts (NTTA), which provides the statistical tool to observe how societies are dealing with age or generational issues.

Households is the most differential sector in national accounts, which covers the entire economy although the monetary transactions which exist are an insignificant part of the total home production. The major part of goods and services is invisible and unobserved in official statistics and registry. Even though a lot of products that are consumed in households are not available and do not take action on the market, they allow to fulfil fundamental individual or group needs. The non-market production is not a monetary cycle but it occurs outside the market. Observing and registering transfers inside and between the households could be provided by the National Transfer Accounts and the National Time Transfer Accounts, which compare the public and private transfers.

The Time use survey 2013 (TUS 2013) for Poland registered that men spend on average one hour per day more than women doing paid work, while women spend more time at home or making duties related to housework (Marszałek, 2016). The proportion of total time spent on doing tasks at work and home is different. The entire time of paid work and domestic work is higher for women than men (Figure 4).

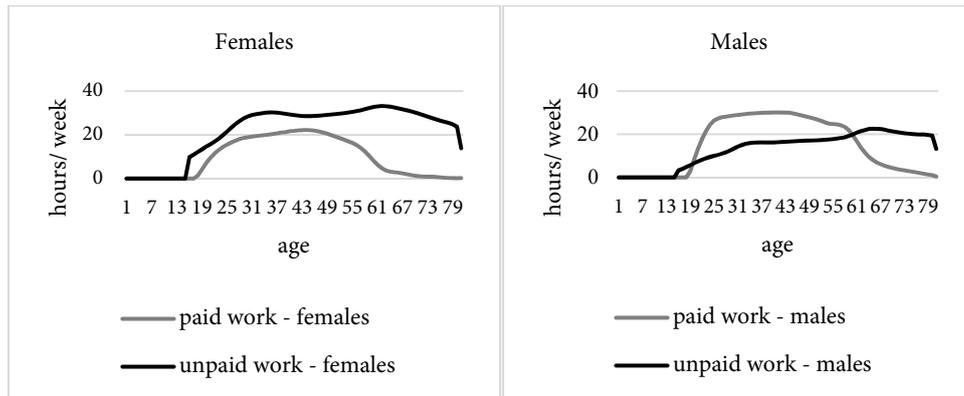


Figure 4. Time transfers of total paid and unpaid work by age and sex in Poland 2013 (in hours/ week)

Source: Own calculations based on POLNTA project carried out at SGH.

Moreover, women aged 25-40 and 50+ are the most important producers of the non-market household production, which means that they are the highest givers of

unpaid domestic work. Men are responsible for gaining income for their households, women for home, even though they are both employed. It confirms the women's double-burdened of domestic work but also stereotypes, social roles and patterns that Polish society is still deep traditional. However, mainly young couples in big towns or cities declare that households in Poland sharing the majority of home tasks between spouses or partners. During the age women are more often unemployed than men in the age. In Poland, a social expectation of women is a deeper commitment in home tasks than in market paid job. Especially help for elder parents or disabled person is dedicated more often for women than men. Therefore, social, cultural and traditional factors are crucial and decisive indicators influence in the population transfers of time, and next in home production and consumption.

The National Transfer Accounts (NTA) and the National Time Transfer Accounts (NTTA) present the economic life cycle as a universal feature of the society. For a long period at the beginning and the end of life people consume more than produce regardless of the type of work: housework (unpaid) or market (paid). In the middle of life there is a period when more is produced than consumed. Many social, behavioural, cultural, educational, political and other factors influence how the labour income, consumption and home production vary with age.

The NTTA profiles of production and consumption present a longitudinal formation of the households' inside and outside transfers (United Nations, 2013). They indicate the toward of transfers not the person to whom the production is offered. It also provides the information about receivers of home production (consumers) and givers of the non-market goods and services.

The current aggregate level of the economic life cycle also reflects the population age structure and the results of activities performed during life. At the beginning, very young and teenager populations, the life cycle deficit equal consumption minus production is dominated. Over the years, when the demographic transition in population age exists, the proportion of the life cycle deficit or surplus is melting down.

During the observations of time distribution in households, the current life cycle stadium reflects. The highest receivers of home production are children, both females and males aged 0-6 (Figure 5). Over the age of 6, they are more decisive and have more skills and abilities to better organize their life and to arrange domestic tasks. In TUS 2013 for Poland it was noticed that children aged 10 and over are not involved in doing housework. Probably, their parents do not expect any or only small portion of help at home as they take the view that children should focus mainly on how better to organize scholar activities and the rest, not on being involved in home tasks.

The most burdened group is women aged 50+ (Figure 5). Women in this cohort are a part of *a sandwich generation*. It means that people in this group are doubly burdened, they help for their elder parents and they take care of their growing children,

who need a lot of attention and support. Sometimes the *sandwich generation* participates in help or care of grandchildren. In Polish households women aged 50+ are pensioners, but they still have the ability to support others, e.g. elder neighbours in daily activities or they work outside the market registration, usually women do care jobs: childcare or adult care.

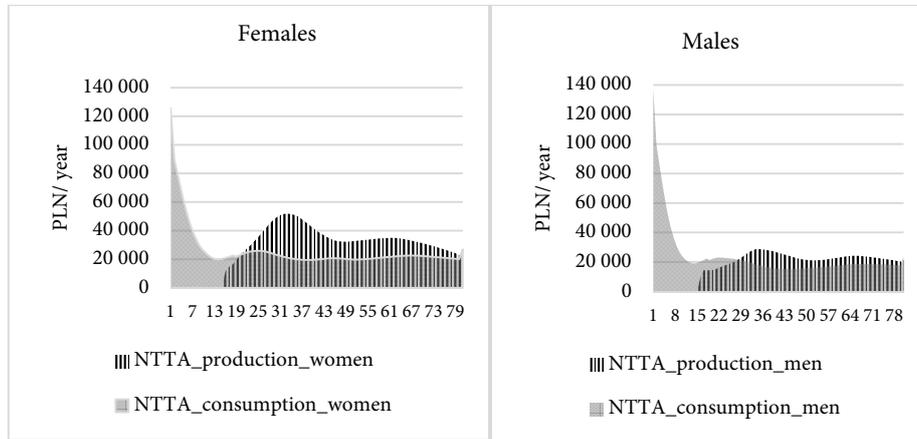


Figure 5. NTTA profiles of the production and consumption transfers by age and sex (PLN/ year)
 Source: Own calculations based on POLNTA project implemented at SGH.

In Poland, social expectations focus on providing care and help for the elder family members or children by women. Even if men share housework, the major part of total domestic duties are the women’s domain. Tradition and a fundamental view are stronger than the social changes which are observed especially in the big cities and in households with men with higher education.

Men make less non-market production than women across their life. The highest volume of domestic work is for men aged 30 to 45 and 60+. Based on the NTTA data, the value and amount of home production is observed by age and sex. The towards of the transfers is not fully registered. Men aged 30-45 do a lot of their housework made not for themselves but for children. It is a time when men and women have children, and they carry out different domestic work for the youngest generation. The opposite perspective is observed in a cohort of men aged 60+, especially the ones who live alone, make a non-market household production for themselves. In Poland, the most valuable group of home duties is food management. Men aged 60+ spend most of their time on activities related to the preparation of a meal (Figure 5).

8. Conclusions

The social and economic changes which have been observed in the last decades focus not only on the market production made in the economy, but also on the non-market factors that influence the general and current macroeconomic horizon. The macro perspective centres on development and economic growth. The micro perspective, which is households' domain, covers all individual and group needs, social expectations, economic decisions. Home production provides the fulfilment of different needs, which is indirectly reflected in companies, financial and governmental institutions, and finally in the national economy. Moreover, households generate value added of their non-market productive activities, e.g. home repairs, cleaning, preparing food, making textiles and clothes, childcare, etc. Although domestic work does not have any market price, it provides a lot of different needs, so it has a value. Therefore, it should be reflected in the core national system of accounts. GDP, value added, national income are formatted not only based on market decision. The social behaviour, needs and expectations create the final demand even if a lot of housework is made for themselves in own households. The real impact of households for the economy should be regularly estimated as an additional comprehensive sort of households information to the official statistics called *Household Production Satellite Account* (HHSA or HPSA). The HHSA with the *National Time Transfer Accounts* (NTTA) are the multidimensional sequence of accounts with information about the volume and value of home production and consumption across the life cycle. Using the information on the social and the economic situation of households can provide a solution to better organize e.g. social and family system, pension system, the law, entrepreneurs' decisions. The observation of time transfers can be supporting in organizing the families' life or adjusting the working system, especially in more flexible work time or partly-time jobs, which will be reflected in better use of the labour resources. The influence of the changes in some areas is necessary, because a lot of international phenomena are observed, such as the aging of society or low fertility rate. Therefore, new but not costly methods and statistical tools to measure and observe the households situation is required and needful. It is necessary to better understand and register the real conditions of the largest and most dimensional sector of the economy (in a more detailed way).

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